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A Journal of Scottish Natural History

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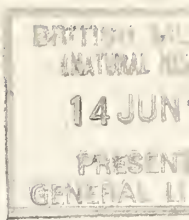
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THE SCOTTISH NATURALIST

A Journal of Scottish Natural History

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99th Year

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SCOTTISH CONNECTIONS IN IRISH BOTANY AND HORTICULTURE

By E. CHARLES NELSON
National Botanic Gardens, Dublin

This essay is based on two papers delivered at separate meetings of the Society for the History of Natural History, the first in the Botanic Garden, Glasgow, on 6th May 1982, and the second at the joint meeting with the Botanical Society of Edinburgh and the Botanical Society of the British Isles held in the Pollock Halls, Edinburgh, from 12th to 14th September 1986.

Introduction

The pre-eminence of Scotsmen in the annals of Irish botany and horticulture is remarkable. In botany they dominated research on the native flora up to 1879, when Dr. David Moore died. In horticulture they continued to be especially influential until the death of John Besant, Keeper of the National Botanic Gardens, Glasnevin, in 1944.

Inevitably in assessing the contribution made by Scotland during the progress of botany and horticulture in another country, it is impossible to mark clear boundaries, because of the movement of people from place to place. I have had to draw a line somewhere, and I have done this arbitrarily by giving prominence here only to those botanists and gardeners who were born in Scotland and who later came to Ireland, there to live and work for several years (see Appendix 1). I have not included botanists and gardeners from other countries who worked in both Scotland and Ireland at different periods during their lives, but I do give a list of those Irish men who studied botany at Edinburgh University under Dr. John Hope (see Appendix 2).

The close familial links between Scotland and north-eastern Ireland established by the Plantation of Ulster did not, it seems, stimulate any growth in interest in either horticulture or botany. The first scientific records of native Irish plants resulted from the perambulations of an English cleric, the Revd. Richard Heaton, during the 1630s and 1640s, but the seventeenth century was rather a 'Dark Age' in Ireland as far as horticulture and botany is concerned (1). Wars and civil commotions resulted in political instability and an ephemeral social order, conditions which were not conducive to gardening or botanical rambles. Moreover, there was no active

botanical teaching in the University of Dublin and no established medical faculty, so that the essential stimulus of studying simples was not present; most Irish men who wished to study physic went abroad to such universities as Leiden (2). It is therefore a mystery why the University of Dublin decided to establish a Physic Garden on the campus of Trinity College in the summer of 1687 (3).

But the peace following the Williamite campaign of 1689-1691 did restore confidence within Ireland, and this also pervaded academic society. Those academics who fled to England during late 1680s returned, and the University of Dublin resumed activities. The Faculty of Medicine, with Dr. Thomas Molyneux as the Professor of Physic, acquired formal recognition in 1711, and the College Physic Garden was restored, expanded and moved to a new site. The first professors of botany in Trinity College were both Irish men and, like Molyneux, they were graduates of the University of Leiden; neither, however, undertook studies of the native flora. Thomas Molyneux did record indigenous plants and probably assembled an *hortus siccus* (herbarium), but he only published one short paper treating Irish botany, preferring to give his notes to the Revd. Dr. Caleb Threlkeld for incorporation into the latter's book, *Synopsis Stirpium Hibernicarum*, the first catalogue of the Irish flora (4).

Caleb Threlkeld

Threlkeld was a native of the English Lake District but during 1696 was a student in the University of Glasgow. While studying there he signed the Bond of Association, by which the University's faculty and students pledged loyalty to King William and declared their belief that he was the rightful and lawful king. Threlkeld recorded in his flora that while pursuing a course in philosophy at Glasgow he began "to follow the natural bent of my mind...in viewing plants and acquainting myself with the skilful in botany, when we made dallies into the fields and fells...to have ocular demonstrations of the plants themselves in their native soils". It may have been that the young Threlkeld dallied too long on the fells and left too little time for studying philosophy, because he left Glasgow without a degree. Returning home to Kirkoswald, he married and raised a family, and pursued a vocation as minister in the local church. During the early 1700s he took up the study of medicine, and in 1712 applied to the University of Edinburgh for the degree of doctor of medicine. He was granted an examination, and was awarded his doctorate on 26th January 1713 (5).

Almost immediately, Threlkeld left Scotland for Dublin, where he set up practice as a doctor and also preached in a conventicle on Sundays. It is recorded that he treated the city's poor and that his practice increased so much that he gave up preaching and devoted himself solely to medicine. The Revd. Dr. Caleb Threlkeld died on 28th April 1728, much regretted by the poor "to whom he had been both as a man and a physician a kind benefactor".

Threlkeld spent his leisure hours collecting plants in Dublin city and the surrounding hills, and from his *hortus siccus*, with the notes provided by Thomas Molyneux, he compiled the first comprehensive catalogue of the indigenous plants of Ireland which was published in Dublin on 27th October 1726. Despite his link with Molyneux, Threlkeld was not a member of the Irish medical establishment and he is not known to have had any contact with Dr. William Stephens, who was the Professor of Botany in Trinity College during the mid-1720s. Thus Threlkeld is a somewhat isolated figure in Irish botanical history; although his book was successful, going through three issues within about one year, he trained no successor and no students followed in his wake.

The University's botanists were no more influential than the solitary Dr. Threlkeld. Although there was an unbroken succession of professors of botany from 1711 to 1800 - Henry Nicholson, William Stephens, Charles Chemys, William Clement, James Span and Edward Hill - they were physicians, not botanists; none produced original publications on native plants and none is known to have collected specimens. Moreover, none of graduates of the University during the eighteenth century is believed to have made any special mark on botany within Ireland or elsewhere. Leiden, however, remained a potent influence, and the only active botanist during the middle decades of the eighteenth century was another Leiden graduate, the Quaker doctor and eccentric John Rutt (6).

Glasnevin, Brown and Underwood

Irish botany did come to life towards the end of the eighteenth century. In 1790 a petition, asking for the establishment in Dublin of a public botanical garden, was sent to the Irish House of Commons. This took five years to achieve, but with the strong support of the Speaker of the Commons, John Foster, ground was leased and on 25th March 1795 work began on the Dublin Society's Botanic Gardens at Glasnevin. A year later the original petitioner, Dr. Walter Wade, a Dublin surgeon and man-midwife who had a considerable interest in botany and whose patron was Speaker Foster, was appointed Professor of Botany to

the Society. Wade supervised the designing and planting of the new botanical garden. It was opened to the public in 1800 and one of the first visitors was Robert Brown.

This young Scottish botanist was serving as surgeon's mate with the Fifeshire Regiment of Fencibles when he visited Dublin; he had already spent five years in Ireland, for most of which time he was stationed in the north of the island. During those years Brown made botanical collections and wrote descriptions of plants both native and exotic. His manuscripts and herbarium specimens are now in the British Museum (Natural History), London, and information from this material was incorporated into the second edition of *Cybele Hibernica*, although a complete study remains to be carried out. Robert Brown apparently concentrated his interests at this period on cryptogams; he found, for example, *Glyphomitrium daviesii*, a rare montane species, at Fair Head (County Antrim) and also on Carlingford Mountain (County Louth) but it has not been collected since. It was this moss which led to Brown's acquaintance with Sir Joseph Banks, and ultimately to his great voyage into the Pacific Ocean (7).

During Brown's visit to the new Botanic Gardens at Glasnevin, in company with the antiquarian Edward Ledwich, he met Wade, and examined some of the specimens in Wade's own herbarium, including the mysterious moss *Buxbaumia aphylla*. Almost certainly the visitors would have been conducted around the Gardens by the head-gardener, John Underwood, as this was one of his duties.

John Underwood was born in Scotland but by the 1790s was living in London. He was elected an associate of the Linnean Society in 1796 on the joint recommendation of William Curtis, John Dickson and several other well-regarded London nurserymen; they affirmed that he was "highly skilled in the knowledge of plants and well versed in their culture". Underwood may have been employed by Curtis, for he is described on the Linnean Society nomination paper as "Of Brompton", and it was Curtis who recommended him to John Foster as a suitable head-gardener for Glasnevin.

Underwood was not in any sense a distinguished botanist and horticulturist. He obviously had a good practical training and was what we would today term a good plantsman. He edited the second edition of the catalogue of plants cultivated in Glasnevin, arranging the taxa according to the Linnaean Sexual System of classification rather than in the sectional arrangements of Professor Wade's first edition. Underwood also prepared regular meteorological reports, which frequently included information on the effect of the weather on the plants

in the Botanic Gardens. He remained in charge of the Society's Botanic Gardens from 1798 until 1833, when the Society was forced to retire him on grounds of age. Unfortunately during the latter years of his tenure of the post of head-gardener, the Gardens went through a period of decline; it is not clear why this happened, but Underwood was censured by the Society in 1820 following the death of a fine Norfolk Island Pine *Araucaria excelsa* and it is suggested that he allowed standards to slip after this incident. It is more probable, however, that the decline began after the death of John Foster in 1828 - he was the potent force behind the Society's work at Glasnevin, and after his death squabbles within the Society led to neglect of scientific matters including the Botanic Gardens (7).

Ninian Niven

By 1833 criticism of the state of the Glasnevin Botanic Gardens was so intense and public that a new curator had to be appointed. Underwood was retired, and he died in 1834. His successor was another Scot, Ninian Niven, who at the time was gardener at the Chief Secretary's Lodge in Phoenix Park, Dublin; because of his position there, Niven had the powerful patronage of the Dublin Establishment and easily gained most votes at the caucus to elect a new head-gardener.

Niven was born at Kelvingrove, near Glasgow, the son of Ninian Niven who served as head-gardener at Keir House near Stirling; he was not, as has been widely stated, the son of the botanical explorer James Niven (8). Young Ninian served as an apprentice under Thomas Butler in the garden at Bothwell Castle, before returning to Glasgow where he studied drawing and painting in his spare time and got to know William Hooker and Stewart Murray. He was then recalled to Bothwell Castle to take charge of the flower garden, but in 1822 moved to Belladrum House, Inverness-shire, where he stayed until invited by the Earl of Glenelg to go to Ireland. Niven took up the post of head-gardener at the Chief Secretary's Lodge in 1827, and remained there until 1834 when he moved to Glasnevin.

Ninian Niven's appointment as curator of the Royal Dublin Society's Botanic Gardens was generally welcomed; his principal task was to effect improvements in the severely run-down garden. At the end of 1833, an anonymous writer in the *Dublin Penny Journal* had claimed that the stock of plants had been diminishing year by year, that the Irish Garden (*Hortus Hibernicus*) was supposed to contain a display of native species but was in fact populated by a few miserable weeds, that the Medicinal Garden (*Hortus Medicus*) contained very few plants worthy of notice, and that the flowers in the

conservatories were not as good as in Dublin's private gardens. The collection of *Pelargonium* was the exception, having the appearance of being skilfully cultivated.

The Niven regime was effective and the collections soon began to improve and increase, but not everyone was pleased. Niven made some minor alterations to the layout of paths, and suggested an elaborate arrangement for the display of plant families involving a serpentine pathway with British (and Irish) plants on one side and non-British representatives of the same family on the other. He also proposed the removal of trees to open up vistas, but was restrained by the Royal Dublin Society. The improvement in the collections came about through Niven's own visits to other gardens, especially several large English ones, whence he received plants as gifts, and also by a scheme which he initiated to encourage people travelling overseas to donate seeds and plants. Niven also commenced making detailed records of all accessions to the Gardens and of all donations from Glasnevin.

Ninian Niven was ambitious, and after four years at Glasnevin resigned to set up his own nursery in Drumcondra; he also began to practise as a landscape designer and horticultural lecturer. He was essentially a gardener with an interest in landscape; he was not a botanist, and is known to have made only one excursion to collect native plants in the western counties. As a landscape gardener Niven's impact in Ireland was considerable - he has been described as the nearest thing to a Court Gardener in Ireland, because he conducted the ceremonial plantings at the Vice-Regal Lodge in Dublin's Phoenix Park during visits by Queen Victoria and other members of the British royal family. He designed and planted the parterre and yew walk in front of the ceremonial entrance to the Lodge. As an exponent of the 'French Style' of garden design, he produced many grand schemes for hotels, town houses and country mansions.

One of his most important contributions to Irish horticulture was his considerable effort to promote the proper training of young men for the profession.

Horticultural training during the nineteenth century, in both Scotland and Ireland, followed a similar pattern. Young boys often began working as garden boys, doing menial tasks but gaining experience and a basic knowledge of garden work. The next stage was that of apprenticeship, when the boy was under the tutelage of a head-gardener, usually in a major private garden; this lasted for at least two years. After his apprenticeship, the young man would move to another garden as journeyman, and again would spend about two years before moving

to the next stage, which was as an 'improver'. Thus before anyone could become a recognised 'gardener' it was necessary to spend at least six years in practical training - there were rarely classes or lectures, except in gardens such as the Botanic Gardens at Glasnevin (9).

This type of training produced young gardeners who knew from experience how to cultivate plants according to well-established principles, and, if their elders were botanically inclined, the pupils could also have a considerable knowledge of those plants commonly in cultivation in large gardens, and occasionally also of local native species. A particular mark of the Scottish gardeners who came to Ireland after receiving their training in Scotland was their espousal of both horticulture and botany - they were 'botanical gardeners'.

Boys were taken in as apprentices at the Botanic Gardens, Glasnevin, during the 1810s - two were admitted each year - but the scheme met with a varied response and some of the pupils were not well-behaved. During Niven's curatorship, the training of apprentices continued. He considered that it was his "duty to inculcate the greatest assiduity" into the apprentices, and whilst he insisted on "a certain advancement in a knowledge of plants and botanical principles", Niven did not permit the pupils "to cultivate this side of their business to the exclusion of the not less important one of practical gardening". By 1849 he had set himself up privately as a 'Professor of Landscape Gardening' and offered young gentlemen a course of instruction, both theoretical and practical, in agriculture and horticulture - a fee of eight guineas was paid in advance (10).

Apprentice gardeners were also engaged in Dublin's other botanical garden, owned and managed by the University of Dublin; it was situated during the nineteenth century in the southern suburb of Ballsbridge, and had as its curator another Scot, James Townsend Mackay.

James Townsend Mackay

The history of the College Botanic Garden is complicated. The University decided to form a physic garden on 25th June 1687, and it was established within a few months. That first garden survived until the early 1720s, when the collections were transferred to a new plot on the campus. Situated behind the Anatomy House - a not-too-ideal place, which soon became a dumping ground for the offal of the Medical School - the second garden flourished for a few years but then declined, and by the mid-1770s was hardly used for its original purpose. A third

Botany Garden was begun at Harold's Cross in Dublin about 1795, but it vanished in 1803 following a dispute between the Board of Trinity College and Dr. Edward Hill, who was Professor of Botany until he resigned his chair in 1800. Dr. Robert Scott was appointed to replace Dr. Hill (11).

After May 1803 the university had a Professor of Botany, but no botanical garden. Dr. Scott was empowered to engage an assistant to help with botanical lectures and to collect plants, and on 25th March 1804 James Townsend Mackay took up that position in Dublin.

A native of Kirkaldy in Fifeshire, Mackay received his primary education locally and then he must have trained as a gardener by following the established apprentice-improver course, but nothing is recorded about this period of his life. During his first two years in Ireland, before the College acquired the land at Ballsbridge, Mackay carried out some field work in southern and western counties, thereby laying the base for his later substantial contribution towards the cataloguing of the native flora. His first publication on indigenous plants was 'A systematic catalogue of rare plants found in Ireland', published in the *Transactions of the Dublin Society* in 1806.

James Townsend Mackay was a skilled horticulturist, who worked well with most of his colleagues, but there were occasional strains in his relationship with George Allman, Professor of Botany in Trinity College, Dublin between 1844 and 1855. Allman complained about Mackay's insolence and stubbornness, and worse still, of Mackay's advertising and giving rival lectures in botany. He contemptuously referred to Mackay as "the gardener" (12).

The College Botanic Garden at Ballsbridge developed swiftly after its formation in July 1806. By the 1820s it excelled the Dublin Society's Botanic Gardens at Glasnevin, and this state of affairs persisted until the appointment of Ninian Niven to the curatorship at Glasnevin. Afterwards a healthy, friendly rivalry developed between the two gardens - frequently they both mounted fine non-competitive exhibits at the local flower-shows, especially those of the Royal Horticultural Society of Ireland. Mackay stimulated the introduction of new plants from overseas; in the 1820s he imported orchids from South America, and in 1828 Dr. Thomas Coulter sent a large collection of living cacti from Mexico (13). Close links were established with Australia after the arrival of James Drummond (see below) in the Swan River Colony.

The College Botanic Garden proved to be an excellent school for young gardeners, including several who followed

Mackay from Scotland. Several young Scots emerged to embark upon important careers in botany and horticulture.

David Moore

One of the first of Mackay's 'pupils' was James Forbes, who was a native of Perthshire; he later entered the service of the Duke of Bedford at Woburn Abbey. Soon after Forbes's departure, David Moore arrived in Dublin to work at the College Botanic Garden. Moore was born in Dundee (he was baptised David Moir, and also used the form Muir) (14); his father and grandfather were gardeners and he chose to follow the same profession. Young Moore was taught natural history by Douglas Gardiner, who had a small botany garden in Dundee and was conservator of the museum of Dundee Rational Institution. When it was time for Moore to begin his training, he was apprenticed to the Earl of Camperdown's head gardener. After serving his time, David Moore moved to Edinburgh and worked for a short period in James Cunningham's nursery at Comely Bank, leaving towards the end of February 1829 for Dublin.

David Moore was perhaps an 'improver' when he came to Dublin - he was almost twenty-one years old - although he may already have progressed beyond that stage. At the College Botanic Garden he rose to the level of foreman. Mackay surely encouraged him to take a close interest in plants, and in 1833 David Moore wrote and published his first article, on a new species of *Catasetum* from America. During his years as Mackay's deputy, he also wrote reports on the plants flowering in the College Botanic Garden.

When John Underwood was retired by the Royal Dublin Society, David Moore was one of the candidates for the vacant position at Glasnevin, but was defeated by Ninian Niven. Evidently Moore had decided that it was time to move from the College Garden, and he secured the position of botanist to the Ordnance Survey in Ireland.

In a letter dated 2nd July 1834, David Moore "beg[ged] leave to introduce himself to [Professor William Hooker] as the person who succeeded your friend Mr. Hopkirk to examine the botanical productions of the County Londonderry" (15). Dr. Thomas Hopkirk, well-known as a founder of the Royal Botanic Institution in Glasgow and author of *Flora Glottiana*, was almost fifty years old in 1834 when he became botanist to the Ordnance Survey. He remained in that post for just two weeks, forced to resign "when ill health disabled him from active exertions". However there is little else known about Hopkirk's work in Ireland, although he lived in Belfast until his death on 24th August 1841. He was employed by the Belfast Natural

History and Philosophical Society in 1840, at a salary of fifteen shillings per week, to arrange and label unclassified collections of shells, and he also gave botanical lectures in the city. In a letter to Sir William Hooker, he intimated that he would be a candidate for the Chair of Botany in Glasgow left vacant by Hooker's own preferment as Director of the Royal Botanic Gardens, Kew. While one memorialist has stated that Thomas Hopkirk's life was "a round of industry", it must be remarked that Hopkirk contributed virtually nothing to botany in Ireland; his successor, David Moore, was more industrious in that field.

Within a few weeks of his appointment as the Survey's botanist, Moore was collecting plants on the slopes of Benevenagh in County Londonderry. From the summer of 1834 until the late autumn of 1838 he worked through that county and adjacent Antrim, recording the native flora and collecting herbarium specimens. There is no evidence that he took any interest in the indigenous flora of Scotland or Ireland before he left the College Botanic Garden, but his work in the north of Ireland was extremely competent. Moore contributed a brief account of the flora of County Londonderry for the first edition of the Ordnance Survey's memoir of the parish of Templemore, which was distributed to the delegates to the first Irish meeting of the British Association for the Advancement of Science, held in Dublin during August 1835 (16).

Flora Hibernica 1836

James Townsend Mackay had not been idle since the publication of his first catalogue of Irish plants in 1806 - a revised version appeared in 1807, and the catalogue was greatly expanded by him so that in 1825 he was able to produce his *Catalogue of Plants found in Ireland*, a substantial check-list, considerably larger than any of the previous attempts at producing floras or lists (17). In 1833 a young lady, Katherine Sophia Baily, anonymously produced a pocket guide to Ireland's native plants, with brief descriptions and some information on localities mainly derived from notes provided by John White, who was until 1833 under-gardener at Glasnevin Botanic Gardens (18). Meanwhile Mackay sent copies of the 1825 catalogue to correspondents throughout Ireland, who provided many new records; David Moore supplied information from the northern counties, and Mackay continued his own field studies, so that in 1836 it was possible for him to revise his catalogue again, and this time to publish a comprehensive *Flora Hibernica*. This was not, therefore, the first flora of Ireland, but it was the first to include detailed plant descriptions and the first to encompass angiosperms, gymnosperms, pteridophytes and

cryptogams (William Harvey contributed the part of algae; Thomas Taylor treated bryophytes and hepatics, but fungi were not included).

In November 1838 David Moore resigned from the Ordnance Survey, after he was appointed Curator of the Botanic Gardens at Glasnevin in succession to Ninian Niven. David's position within the Survey was taken over by his younger brother Charles, who had also worked under James Townsend Mackay in the College Botanic Garden.

Charles Moore came to Ireland following his mother's death in 1832. After he had served his time in the Botanic Garden, he too joined the Ordnance Survey, in May 1837. He carried out fieldwork mainly in County Donegal before moving to England to continue his career as a gardener. Charles Moore was appointed curator of the Botanic Gardens in Sydney in 1848, and remained in charge there until he retired in 1896. Although he had abandoned Irish botany in favour of horticulture, Moore did make a significant contribution to the study of the native plants of New South Wales (19).

Moore was not the first Scot to make his home in Australia after working in an Irish botanical garden - twenty years earlier James Drummond had made the same move.

James Drummond in Cork

At the beginning of the nineteenth century, Cork was Ireland's second city and a prosperous port. There was no university in the city, yet there was a small close-knit community of intellectuals, just as there was at the same time in Belfast. In 1803, inspired by the Revd. Thomas Dix Hincks, a native of Dublin, a group of eminent Corkonians established and supported the Cork Institution. Hincks was a keen naturalist, and contributed to J.T. Mackay's *Flora Hibernica*; he also wrote a commentary on it, in the form of an essay on the history of botany in Ireland (20).

The Royal Cork Institution (granted a royal charter in 1807) eventually established four chairs and appointed Professors to teach Chemistry, Natural History, Agriculture and Natural Philosophy. As is usual in most societies, the early years were marked by vigour and enthusiasm and the Institution undertook several major projects, including the formation of a library and a botanical garden. On 4th April 1808, Dr. Hincks wrote to James Townsend Mackay to report that "we have at last fixed on the site of a Botanic Garden. It is in the rich tract between Sundays Well and Evergreen, leading towards Ballyprehane Bog, and consists of nearly 6 acres...Our business

is now a gardener. We wish to have one well versed in Botany and Gardening" (20). Mackay evidently suggested James Drummond, for on 6th June 1808 the Managers of the Institution agreed to "Mr. Drummond's terms as stated by [Mackay]".

James Drummond was born in the parish of Inverarity and Meathie, Angus (21) - he was the son of Thomas Drummond, a gardener at Fotheringham estate, and was baptised on 7th January 1787. Thus he was just twenty-one years old when he came to Cork. Very little is known about his youth or his horticultural training, but Dr. Hincks's letter to James Mackay included mention of a Mr. Dickson, perhaps a Scottish nurseryman and then Drummond's employer. Drummond undertook the establishment and management of the Botanic Garden in Cork, and also engaged in field studies of the native plants in the south-west of Ireland. He discovered the orchid *Spiranthes romanzoffiana* at Castletownberehaven, made the first definite record of *Pinguicula grandiflora*, and published lists of the flora of County Cork in the *Munster Farmers' Journal*, which was edited by Thomas Hincks.

The Royal Cork Institution was severely affected in the latter years of the 1820s, when the United Kingdom government progressively reduced grants to it. The Institution was unable to meet the rent of the site occupied by the Botanic Garden, and was informed by the Chief Secretary in December 1828 that the government would not consider any further annual estimates for the expenses of a botanical garden. James Drummond realised that his position was very insecure, and pleaded with the Managers to be allowed the "ensuing summer to prepare for removal...I have served the Institution for more than twenty years. I have spent in your service the best years of my life. All the property I possess in the world consists in the plants which belong to me in the Garden, if I am forced to part with them precipitately, the little that is left to me will be sacrificed". By 5th January 1829 he had obtained permission to "proceed as a settler to the colony about to be formed at Swan River" (Western Australia), and in the middle of February he and his family sailed on the *Parmelia*.

The site of the Botanic Garden in Cork is now occupied by the Father Mathew cemetery; the Institution handed it back to the landlord, the Rev. Richard Croly, on 2nd February 1829. No other attempt was made to form a public botanical garden in Cork, although the Queen's College (now University College), which was established in 1849, did maintain a small botanical garden for the use of its professors of botany throughout most of the late nineteenth and early twentieth centuries.

Belfast and Thomas Drummond

It is a mere coincidence that as James Drummond resigned as Curator of the Botanic Garden in Cork, his younger brother Thomas was settling in as Curator of a new Botanic Garden in Belfast. This was established by the Belfast Botanic and Horticultural Society without the assistance of grants from the government. A one acre site was leased in 1827, but it was too small and was abandoned; in 1829 a larger site, covering fourteen acres on the banks of the River Lagan, was acquired and the extant Botanic Garden (now Belfast Botanic Gardens Park) was begun. A professional botanist was sought for the new garden, and Thomas Drummond was selected.

Thomas Drummond was a protégé of William Hooker. He had been sent to North America in 1825 as assistant naturalist on Sir John Franklin's Second Land Arctic Expedition, during which he visited the Rocky Mountains and made extensive herbarium collections. By late October 1827 he was back home in Scotland, and spent some time preparing the second of two exsiccatae (his first was of Scottish bryophytes) of mosses collected in North America. He must only have remained in Scotland for a short time; by August he was writing to Hooker from Belfast. Thus he took up his post about a year before the Botanic and Horticultural Society leased the new ground.

Drummond laid out "a very beautiful garden", but he did not get on well with members of the Society, who said that they "had lost 2 years and £200 thro' his neglect". By early December 1830, Drummond had been dismissed and was planning to return to North America if William Hooker could raise a sufficient number of sponsors. Furthermore he had "faithfully abstained from all intoxicating drink...and [was] fully determined to continue this most salutary reform", as indeed he had solemnly promised to Mrs Katherine Templeton (21). By 25th April 1831, Thomas Drummond was in New York; he travelled as far as Texas, and died in Havana in March 1835.

Thomas Drummond made little contribution to the study of Ireland's native flora, since he spent most of his short time in Ireland laying out the new botanical garden; he did collect some native plants about 1810, when he was in Cork with his brother, and near Belfast found the rare Northern Horsetail *Equisetum pratense*, which William Hooker named *E. drummondii* (the name was superfluous). His successor as Curator was David Bishop, another Scotsman, a native of Scone, who worked for a time as amanuensis to John Claudius Loudon. Bishop did not remain in the post for long, resigning to establish a nursery in the Malone area of Belfast. He did collect native Irish plants, however, including *Juncus effusus* f. *spiralis* (22).

Bishop's successor was John Campbell, about whom little is known except that he left Belfast Botanic Garden around July 1836 and was succeeded by Daniel Ferguson, who was to remain as Curator until his death in 1864. Ferguson worked in the Botanic Garden, Glasgow, before he was appointed Curator at Belfast. In 1851 he published a popular guide to the Royal Botanic Garden, Belfast, and in 1853 succeeded in flowering the spectacular waterlily *Victoria amazonica* in a small glasshouse which he had built himself; this was the first time the plant bloomed in Ireland. Ferguson was responsible for Belfast Botanic Garden during its heyday, when the superb Palm House was designed and erected. Ferguson was principally a gardener, however, and made but a minor contribution to the progress of Irish botany. He was succeeded as Curator by his son, William Hooker Ferguson (23).

Belfast's Professors

Belfast had a thriving intellectual community throughout the first half of the nineteenth century; men such as John Templeton, James Lawson Drummond, William Thompson and Robert Patterson promoted the study of natural history in particular, scientific and philosophical societies flourished, and the Belfast Academical Institution (founded in 1807, but students were not enrolled until 1814) and Belfast Academy (founded in 1786) served as focal points by attracting competent scholars as professors (24).

James Lawson Drummond, who was born at Larne in County Antrim (and is not related to the Drummonds of Cork and Belfast botanical gardens), graduated from the Faculty of Medicine in the University of Edinburgh in 1814 and was appointed Professor of Anatomy in the Belfast Academical Institution in 1818. He was among the group which founded the Belfast Botanic Gardens, and greatly promoted natural history, especially botany, through his books and lectures. His anonymously published *Thoughts on the Study of Natural History*, which appeared in 1820, was a stimulus towards the formation of the Belfast Natural History and Philosophical Society in the following year; the first meeting was held in his house, and for the initial year Drummond served as President. His successor as President (1822-1827) was Thomas Dix Hincks, who had that year moved from Cork to Belfast as Professor of Oriental Languages in the Academical Institution. One of his fellow professors was William Knight, a native of Aberdeen and a friend of Robert Brown; he held the Chair of Natural Philosophy at the Academical Institution from 1816 to 1822, but he made no contribution to Irish botany.

With the formation of the Queen's College (now Queen's University) in Belfast in 1849, some of the functions of the Academical Institution were transferred to the College. Another Aberdonian, George Dickie, was appointed Professor of Natural History in the Queen's College, and he remained in Ireland until 1860 when he returned to his native city as Professor of Botany. Dickie was a keen field naturalist and made extensive notes on the occurrence of plants, which he published in *A Flora of Ulster*, a pocket-sized 'botanist's guide to the north of Ireland' described by the author as a 'Collecteana', issued in Belfast in 1864. This flora is of considerable interest for it included certain novel features, including an introductory essay in which Dickie gave details of the altitudinal ranges of some plants, and noted the flora of the highest mountains in the north and west of Ireland.

Dickie's successors in Queen's College, Belfast, included Robert Cunningham of Prestonpans, who was Professor of Natural History from 1871 to 1902, and James Small of Brechin in Angus, who occupied the Chair of Botany from 1920 to 1954.

Botanical Societies - Belfast, Edinburgh, London

Belfast formed one of the first of the new botanical societies which were established during the nineteenth century, but like the later Royal Botanic Society in London, its sole purpose was the formation of a garden. The society, called the Belfast Botanic and Horticultural Society, came into existence in 1827 and succeeded in its purpose. Its principal movers were not of Scottish origin, but, as has been noted, the Society's botanical garden was staffed by Scotsmen.

Botanical societies with the primary purpose of conducting lectures and exchange programmes sprang up in many British cities during the 19th century, but in Ireland only one attempt was made to inaugurate such a society "to promote the Cultivation of Botany". The Botanic Society of Dublin issued a prospectus dated 28th April 1842, and had but a fleeting existence - indeed it probably never met.

More successful was the Botanical Society of Edinburgh, the first meeting of which took place on St. Patrick's Day (17th March) 1836. A few months later, on 27th July, the Botanical Society of London held its inaugural meeting. In the absence of a local botanical society, both the Edinburgh and London societies attracted the attention of those amateur and professional botanists resident in Ireland.

In his analysis of the composition of the short-lived London Botanical Society (1836-1857), David Allen (25) noted

that throughout its years the Irish component was never substantial; there were only thirteen members resident in Ireland, four per cent of the total. The proportion of Irish members in the Botanical Society of the British Isles today is a mere three per cent. The Botanical Society of London attracted David Moore and James Townsend Mackay; George Dickie was a member too, but was not resident in Ireland during the period.

The Edinburgh society elected many more Irish botanists, but there is little overlap in the lists. Robert Ball and William Thompson were appointed local secretaries for Dublin and Belfast respectively in June 1836, and were admitted as non-resident members in November 1836. In December another ten Irish people, including James Townsend Mackay, Thomas Hincks, Ninian Niven and Miss Katherine Baily - she was a life member of the Botanical Society of Edinburgh - were enrolled. William Allman and John Wynne joined in 1837 and 1839 respectively; they were also members of the Botanical Society of London. David Moore was elected in November 1839. In 1854 Miss Catherine Gage was admitted as an 'Extraordinary Member'; Miss Gage lived in Rathlin Island, where she studied the local flora and published a list of its plants in the *Annals and Magazine of Natural History* in 1850. William McCalla of Roundstone, County Galway, whose family was of Scottish origin, was an associate of the Society (26).

The *Transactions* published in Edinburgh provided a useful forum for botanical papers relating to Ireland; for example, Professor Robert Graham gave an account of his visit to the west of Ireland in 1838, Thomas Taylor published several papers on Irish species of *Jungermannia*, and in 1855 there were reports on the effects of severe frost in Dublin (by David Moore), Belfast (by George Dickie) and Sligo (by John Wynne); A.G. More (see later) published his first botanical paper, an account of the flora of Castle Taylor, County Galway, in the *Transactions*. During the same period the London society did not publish a journal, although the *Phytologist* (first issued in 1841) served "in effect [as] a house journal" for the Society; numerous notes relating to Irish botany appeared in it, but it was a commercial periodical.

Towards a Cybele Hibernica

The publication of *Flora Hibernica* in 1836 helped to stimulate greater interest in the Irish native flora. Although James Townsend Mackay did not publish any subsequent work, he accumulated materials towards a second edition, but that never materialized. *Flora Hibernica* was not to remain for long the

standard floristic work dealing with Ireland; its major defect was that it contained no descriptions. Miss Baily's flora did have brief descriptions, and was republished in 1845. In 1847 William Steele published in Dublin a *Handbook of Field Botany*; it included both British and Irish species and was also republished in 1851. The British floras of Hooker and Arnott, of Babington, and of Bentham, were of use to botanists in Ireland. Thus the middle years of the nineteenth century were well endowed with descriptive texts of various sizes and complexity. What remained to be satisfied, in the context of Ireland, was a flora giving comprehensive information on the geographical distribution of plants; the distribution records in *Flora Hibernica* were few and soon out-of-date. James Mackay maintained his interest in native plants, but with increasing age and declining health he gradually became less mobile and unfit for field-work. Eventually his mantle as Ireland's premier field botanist passed to his pupil, David Moore. Once firmly established in the Botanic Gardens at Glasnevin, and once the Garden's own future was secured, Moore devoted much of his energy to the study of native plants, both phanerogams and cryptogams.

At the Botanic Gardens during the Great Hunger of 1845 to 1848, Moore carried out experiments on the causes of the potato murrain. About the same time, he raised several species of orchids from seed, and succeeded in flowering the plants - this was the first time such a task had been achieved in a botanical garden. In later years, under his direction, the first artificial hybrids of *Sarracenia* were produced (27). The introduction of plants from overseas was a major function of Glasnevin, and David Moore continued the work initiated by Ninian Niven. Seeds and plants were obtained from the Argentine through the Scottish emigré, John Tweedie - his sendings included the Pampas Grass *Cortaderia selloana* (originally named *Moorea* after David Moore). Michael Pakenham Edgeworth and Edward Madden (who was President of the Botanical Society of Edinburgh in 1853) sent seeds from the Himalaya, and Charles Moore despatched Wardian cases full of plants from Australia. William Grant Milne, another Scot, was paid by David Moore to collect in West Africa.

The study of plant distribution patterns in Britain received considerable attention from H.C. Watson, who published several works on the topic, including *Cybele Britannica* in 1847. But Watson's *Cybele* did not include Ireland. Augustin-Pyramus de Candolle's work on the distribution of plants also provoked debate, which was joined by David Moore who read a paper, based on de Candolle's work, to the Dublin University Zoological and Botanical Association in January

1859. Soon afterwards, Professor Charles Babington published a paper entitled 'Hints towards a Cybele Hibernica', and this stimulated Alexander Goodman More, an English zoologist of Scottish descent, to add his remarks on the subject. Thus came about the joint effort of Moore and More, which resulted in 1866 in the publication of the first edition of *Cybele Hibernica*, in which details of the distribution of flowering plants and ferns were published, employing the twelve-district scheme that had been suggested by Babington (28). Moore and More used their own data and also materials published by earlier authors, including George Dickie's *Flora of Ulster*, which had also been influenced by Watson's work and included details of the altitudinal ranges of plants in the northern half of Ireland.

David Moore's Successors and the Scottish Legacy

Dr. David Moore was the dominant figure in Irish botany right up to his death in 1879; even during the 1870s he published lists of bryophytes and hepatics. He also dominated Irish horticulture from Glasnevin, and by the time of his death he had raised the status of the Botanic Gardens to that of a garden of international significance. Glasnevin was indeed reaching its prime.

The Scottish connection was still considerable throughout botanical and horticultural circles in Ireland, except in the University of Dublin - only one of the Professors of Botany in Trinity College between 1711 and 1970 was not an Irish man, and that was Alexander Dickson who held the chair from 1866 to 1868 (Dickson became Regius Keeper of the Royal Botanic Garden, Edinburgh in 1879). The Professor of Botany in the Royal College of Science in Dublin from 1872 was William Ramsay McNab, son of James and grandson of William McNab. W.R. McNab was an ambitious person; he tried to force Dr. David Moore's retirement and his own preferment as Director of the Glasnevin Botanic Gardens. After Moore's death, and the rapid appointment of his son Frederick as curator, Professor McNab was made Scientific Superintendent of the Botanic Gardens, but his role was very closely circumscribed. He tried to carve out a niche within the Science and Art Department which controlled the Gardens and the College of Science, independent of the Director of the Department (29).

McNab died in 1889 and his herbarium was eventually purchased by the Science and Art Department for the newly built National Museum in Dublin. This herbarium included many specimens collected by McNab's grandfather when he was at the Royal Gardens in Kew (before May 1810) and at the Botanic

Garden in Edinburgh (after May 1810), and also included James McNab's North American collections. In 1970 W.R. McNab's herbarium was transferred, with the entire botanical collections of the National Museum, to the National Botanic Gardens, Glasnevin (30).

Scottish influence began to wane at the close of the nineteenth century. There were still Scottish gardeners in Ireland, and in 1907 John Besant arrived to begin his career at Glasnevin. On the retirement of Sir Frederick Moore in 1922, John Besant, who was a native of Longforgan, took over the Keepership in the National Botanic Gardens. He steered the Gardens through a difficult period, the economic war between the Irish Free State and the United Kingdom, the world depression, and then the first years of what was called 'The Emergency' in Ireland (a euphemism for the second World War, during which the Irish Republic remained neutral). It is a measure of Besant's success that the National Botanic Gardens continued to hold its considerable international reputation, and that it was able to assist in the replanting of other botanical gardens after the war.

The picture which emerges is that Irish botany and horticulture owe a substantial debt to Scotland; no similar debt is due to England or Wales, for the other major workers in these fields were Irish men and women. During the early decades of the nineteenth century, the four botanical gardens in Ireland were managed by men of Scottish birth, trained in Scottish gardens. The Botanic Gardens at Glasnevin had a long succession of Scottish gardeners - John Underwood, Ninian Niven, David Moore, and John Besant. Furthermore, the principal floristic works published in Ireland up to the beginning of this century were compiled by men who had strong connections with Scotland - Caleb Threlkeld, James Townsend Mackay, A.G. More and David Moore. There were, of course, many other instances of Ireland and Scotland sharing botanists and horticulturists - John Tweedie, Augustine Henry (31), Edward Madden, and Alexander Dickson, to name but a few (32) - and the Scottish connection continued into this present decade - Murdo Mackenzie, who died in 1983, came from Forres and worked from 1928 helping to create the superb garden on Innacullin (Garinish Island) in Bantry Bay.

Appendix 1

Botanists and horticulturists with Scottish-Irish links

This list is derived mainly from R.G.C. Desmond's *Dictionary of British and Irish Botanists and Horticulturists* (London, 1975), with some additions from the author's own research. Only the

most significant posts are noted for each person - fuller details are available in Desmond (1975) and the other sources already quoted.

ALLMAN, George James (1812-1898); born Cork. Professor of Botany, Dublin and Edinburgh.

ANDERSON, Mark Loudon (1895-1961); born Kinneff. Director of Forests, Ireland, 1931-1946.

ARCHIBALD, Joseph (1784-1874); born Edinburgh. Gardener in Ireland.

BAIN, John (1815-1903); of Scottish descent. Curator of Trinity College Botanic Garden, Dublin.

BESANT, James Grey (fl.1912-1930); born Longforgan (brother of J.W. Besant). Gardener at Carlow before moving to Harrogate.

BESANT, John William (1878-1944); born Longforgan. Keeper of National Botanic Gardens, Glasnevin, 1922-1944.

BESANT, William David (died 1946); born Longforgan (brother of J.W. Besant). Gardener in Kildare before returning to Glasgow.

BISHOP, David (c.1788-1849); born Scone. Curator of Belfast Botanic Gardens.

BROWN, Robert (1773-1858); '*Jupiter Botanicus*' served in Ireland as a surgeon in Fifeshire Regiment of Fencibles, 1795-1800.

BRYCE, James (1838-1922); born Belfast. Studied flora of Arran.

CLEGHORN, George (1716-1789); born Granton. Professor of Anatomy, Dublin.

COLDEN, Cadwallader (1688-1776); born Lurgan. Studied in Edinburgh; emigrated to North America.

CONSIDEN, Dennis (c.1755-1815); born in Ireland. Graduate of Edinburgh; with First Fleet to Botany Bay in 1787.

CRICHTON, Alexander (1763-1856); born Edinburgh. Studied fossil flora of County Sligo.

CUNNINGHAM, Robert Oliver (1841-1918); born Prestonpans. Professor of Natural History, Belfast.

DICKIE, George (1812-1882); born Aberdeen. Professor of Natural History, Belfast; wrote a flora of Ulster (1864).

DICKSON, Alexander (c.1802-1880); born Hawthornden. Founded nursery at Newtonards, County Down.

DICKSON, Alexander (1836-1887); born Edinburgh. Professor of Botany, Dublin; Regius Keeper of Royal Botanic Garden, Edinburgh.

DOBBS, Arthur (1689-1765); born Girvan of Irish parents. Lived in County Antrim before moving to North Carolina; observed foraging behaviour of bees.

DRUMMOND, David (c.1813-1904); born in Scotland. Seed-merchant

in Dublin.

- DRUMMOND, James (c.1787-1863); born Inverarity, Angus. Curator of Cork Botanic Garden; emigrated to Western Australia.
- DRUMMOND, James Lawson (1783-1853); born Ireland. Studied at Edinburgh before returning to Belfast.
- DRUMMOND, Thomas (1793-1835); born Inverarity, Angus (brother of James Drummond). Curator of Belfast Botanic Gardens.
- EDGEWORTH, Michael Pakenham (1812-1881); born Edgeworthstown. Studied at Edinburgh; collected in Himalayas; died in Scotland.
- FERGUSON, Daniel (died 1864); probably born in Scotland. Gardener at Glasgow Botanic Garden; Curator of Belfast Botanic Gardens.
- FERGUSON, William Hooker (fl.1860s); son of Daniel Ferguson; named after Professor W.J. Hooker. Curator of Belfast Botanic Gardens.
- FORBES, James (1773-1861); born Bridgend. Trained under J.T. Mackay in College Botanic Garden, Dublin; moved to Woburn Abbey.
- GRAHAM, Robert (1786-1845); born Stirling. Professor of Botany, Edinburgh; collected in Ireland.
- GRIERSON, Robert (died 1929); born in Ireland. Solicitor in Glasgow, where he studied local flora.
- HANCOCK, Thomas (1783-1849); born in Ireland. Graduate of Edinburgh.
- HENNEDY, Roger (1809-1877); born in Ireland. Professor of Botany, Andersonian Institution, Glasgow.
- HENRY, Augustine (1857-1930); born Dundee of Irish parents. Explored central China; Professor of Forestry, University College, Dublin.
- HINCKS, Thomas Dix (1767-1857); born in Ireland. LL.D. from Glasgow.
- HOOKER, William Jackson (1785-1865). Visited Ireland on several occasions and had many friends there.
- HOPKIRK, Thomas (1785-1841); born Dalbeath. Botanist in Irish Ordnance Survey; lectured in Belfast.
- JAMES, Robert (1910-1984); born in England. Orchid gardener in Glasgow Botanic Garden; came to Ireland in 1939; foreman in National Botanic Gardens, Glasnevin.
- KENNEDY, Richard (1785-1810); born in Ireland. Studied in Edinburgh; died at age of 25.
- KNIGHT, William (1786-1844); born Aberdeen. Professor of Natural Philosophy, Belfast.
- LITTON, Samuel (1781-1847); born London. Studied in Edinburgh; Professor of Botany, Royal Dublin Society.
- LOUDON, John Claudius (1783-1843); born Cambuslang. Visited Ireland in early 1800s.
- LYON, John (c.1765-1814); born Gillogie. Emigrated to North

- America; nurseryman; returned to Europe and sold plants to Glasnevin Botanic Gardens.
- McCALLA, William (c.1814-1849); birthplace not known, but of Scottish descent. Botanical collector in Ireland; Associate of Botanical Society of Edinburgh.
- McCOSH, James (1811-1894); born Carskeoch. Professor of Logic, Belfast; emigrated to U.S.A.
- MACFARLANE, John Muirhead (1855-1943); born Kirkcaldy. Lecturer in botany, Royal Veterinary College, Dublin.
- MACKAY, James Townsend (1775-1862); born Kirkcaldy. Botanical Assistant, University of Dublin, 1804; Curator of College Botanic Garden, Dublin, 1806-1862.
- MACKENZIE, Murdo (1896-1983); born Forres. To Ireland in 1928 as gardener on Ilnacullen (Garinish Island), County Cork.
- McNAB, William Ramsay (1844-1889); born Edinburgh. Professor of Botany, Royal College of Science, Dublin, 1872; Scientific Superintendent, Royal Botanic Gardens, Glasnevin, 1880. His herbarium is in DBN.
- MADDEN, Edward (1805-1856); probably born in Kilkenny. Army officer; collected seeds and plants in Himalayas for Glasnevin Botanic Gardens; President of Botanical Society of Edinburgh, 1853.
- MELVILLE, Alexander Smith (died 1876); 'from Galway'. Lecturer in Botany and Geology, Edinburgh School of Arts.
- MILNE, William Grant (died 1866); birthplace not known, but a Scot. Collected plants in Pacific and West Africa for Charles and David Moore; corresponded with David Moore.
- MOORE, Charles (otherwise Moir or Muir) (1820-1905); born Dundee (youngest brother of David). Trained in College Botanic Garden, Dublin, 1832; Botanist in Irish Ordnance Survey 1837; Curator of Botanic Gardens, Sydney, 1848-1896.
- MOORE, David (otherwise Moir or Muir) (1808-1879); born Dundee. Gardener in College Botanic Garden, Dublin, 1829; Botanist in Irish Ordnance Survey, 1834-1838; Curator (later styled Director) of Glasnevin Botanic Gardens, 1838-1879.
- MORE, Alexander Goodman (1830-1895); born in England (of Scottish descent). Zoologist and botanist; in Natural History section, National Museum, Dublin, 1881; worked with David Moore on *Cybele Hibernica* (1866).
- NIVEN, Ninian (1799-1879); born Kelvingrove, Glasgow. To Ireland in 1827 as gardener to Chief Secretary; Curator of Glasnevin Botanic Gardens, 1834-1838; then nurseryman and landscape gardener (entry in Desmond is incorrect).
- PARNELL, Frederick (1882-c.1950); born Dublin. Trained briefly at Royal Botanic Garden, Edinburgh; gardener in Glasnevin Botanic Gardens.
- ROURKE, James (c.1870-1919); born in Ireland. Trained at

- Glasnevin Botanic Gardens; Superintendent of Botanic Garden, Glasgow.
- SCOTT, Robert (1757-1808); born in Ireland. Studied at Edinburgh (see Appendix 2); Professor of Botany at Dublin, 1800-1808.
- SCOULER, John (1804-1871); born Glasgow. Accompanied David Douglas to Pacific; Professor of Natural History, Royal Dublin Society; supported work of William McCalla (q.v.); buried in Kilbarchan.
- SHUTTLEWORTH, Robert James (1810-1874); born in England. Studied in Edinburgh; collected in Ireland.
- SMALL, James (1889-1955); born Brechin. Professor of Botany, Belfast, 1920-1954.
- SMITH, George (1825-1899); born Perth. Gardener at Vice-Regal Lodge, Phoenix Park, Dublin.
- THRELKELD, Caleb (1676-1728); born Kirkoswald, Cunderland. Studied at Glasgow; graduated from Edinburgh; lived in Ireland 1713-1728, and wrote first Irish flora - *Synopsis Stirpium Hibernicarum* (1726).
- TWEEDIE, John (1775-1862); born Lanarkshire. Emigrated to Argentine; collected seeds for Glasnevin Botanic Gardens.
- UNDERWOOD, John (died 1834); born in Scotland. Came from Brompton to Dublin as head-gardener in Glasnevin Botanic Gardens, 1798-1833.
- WATSON, William (fl.1860); born Douglas. Nurseryman; to Ireland in 1856, and founded Watsons of Killiney.
- WHITE, John (c.1756-1832); born Letterbreen (Fermanagh). Surgeon-General of New South Wales; obtained M.D. from University of St. Andrews, 1796.

Appendix 2

Irish Botanical Students in Edinburgh, 1763-1786

This list is based on information extracted from Dr. John Hope's manuscripts, which give the names of the gentlemen who attended his botanical lectures from 1763 to 1786. The original manuscripts are in the Scottish Record Office (GD 253/144/8), and xerox copies are kept in the Royal Botanic Garden, Edinburgh. For further particulars of Hope, and of his manuscripts, see *John Hope 1725-1786, Scottish Botanist* by Professor A.G. Morton (Edinburgh, 1986), especially page 45.

From the manuscripts (using the xerox copies in R.B.G., Edinburgh) I have extracted the names of those students stated to have come from Ireland; the spelling of the names given below is that used by Hope. Comments such as 'paid late' indicate that the student concerned did not pay his lecture fees on time - and apparently some never paid at all! Lists of

supper guests also include some Irish names; these are noted at the end.

1763 Botany class

Chas McDiarmothiod
 Jo. Herbert Orpen
 Daniel Rainey
 Hugh Sheill

1773 Botany class

Mr. Ganicle	Paid late
Mr. Boyd - 2nd year	Paid late
An Irish gentleman mentioned by Mr. Boyd	Did not pay fee

1774 Botany class

Mr. Gillespie

1775 Botany class

Henry Bar	Paid late
Samuel Moore	
Alexr Scot	
Robert Scot (a)	

1777 Botany class

Robert Baxter	Paid late
John Curry	Did not pay fee
John Grieve	Did not pay fee
Robt Hamilton	Paid late
Jas Prossor - 2nd year	Paid late
Dennis Ryan	Did not pay fee

1779 Botany class

Pitt Walsh

1780 Botany class

Thos Fulham
 Bryan Smith

1782 Botany class

William Archdeacon
 Thomas Bell
 John Ussher - Dublin

1783 Botany class

Arthur Campion	Did not pay fee
Charles Johnston	Paid late
John Morris	
Thomas Ryan	
John Smith	Did not pay fee

1784 Botany Class

John Boyton AB Trin. Coll. Dublin
John Craven
Thos Addis Emmet (b)

1785 Botany class

James Behan

1786 Botany class

William Blunt	Paid late
Daniel O'Sullivan	Paid late

1779 Supper guests

16th June Mr. Keating
17th June Mr. Fletcher
 Mr. Sawers
18th June Mr. Percival (c)
 Mr. Walsh
28th June Mr. E. Cullen

1780 Supper guests

12th July Dr. Joseph Little
 Mr. Hill (c)

(a) Later Professor of Botany, University of Dublin.
(b) Brother of Robert Emmett, Irish patriot executed in 1803.
(c) These two guests were probably the antagonists, Robert Perceval and Edward Hill, medical professors in the University of Dublin in the 1790s, when Glasnevin Botanic Gardens was established - see Nelson and McCracken (1987) - Note 7.

Notes and References

1. For a review of early Irish botany, see:

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2. NELSON, E.C. (1982). The influence of Leiden on botany in Dublin in the early eighteenth century. *Huntia*, 4: 133-146.
 3. NELSON, E.C. (In press, 1988). Introduction, in *An Irish Florilegium 2*. (By W.F. Walsh and E.C. Nelson). London. (See also Note 2).
 4. NELSON, E.C. (1979). Records of the Irish flora published before 1726. *Bulletin of the Irish Biogeographical Society*, 3: 51-74. (See also Note 5).
 5. NELSON, E.C. (In press). *The First Irish Flora: Caleb Threlkeld's Synopsis Stirpium Hibernicarum*. Facsimile edition. Kilkenny.
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6. RUTTY, J. (1772). *An Essay towards a Natural History of the County of Dublin*. Dublin. (See also Note 7).
 7. NELSON, E.C. and MCCRACKEN, E.M. (1987). *The Brightest Jewel. A History of the National Botanic Gardens, Glasnevin, Dublin*. Kilkenny.
- For Robert Brown, see MABBERLEY, D.J. (1985). *Jupiter Botanicus: Robert Brown of the British Museum*. London.
8. Jennifer Lamond kindly assisted in unravelling the life history of Ninian Niven; there is a chapter about him in Nelson and McCracken (1987) - Note 7.
 9. DEMPSEY, P. (1979). Horticultural education in Ireland - past and present. In *Irish Gardening and Horticulture* (Ed. E.C. Nelson and A. Brady), pp. 105-118. Dublin.
 10. NIVEN, N. (1838). *Companion to the Botanic Gardens*. Dublin. See also Nelson and McCracken (1987) - Note 7; and Dempsey (1979) - Note 9.
 11. NELSON, E.C. (1987). Botany, medicine and politics in eighteenth century Dublin, and the origin of Irish botanical gardens. *Moorea*, 6: 33-44. See also Nelson (1982) - Note 2; and Nelson and McCracken (1987) - Note 7.

Professor Scott was a student at Edinburgh in 1775 - see Appendix 2.

12. JACKSON, P.S.W. (1987). *The Story of the Botanic Gardens of Trinity College Dublin, 1687 to 1987*. Dublin. See page 9; I am grateful to Dr. Jackson for this anecdote.
13. NELSON, E.C. and PROBERT, A. (In prep.). *A Miner Botanist: Thomas Coulter (1793-1843) of Dundalk*.
NELSON, E.C. (1983). Thomas Coulter (1793-1843) in North America: some bibliographic problems and some solutions. *Contributions to the History of North American Natural History. Society for the Bibliography of Natural History, Special Publication No. 2*: 59-71. London.
14. NELSON, E.C. (1984). David Moore's date of birth - a correction. *Glasra*, 7: 24.
See also Nelson and McCracken (1987) - Note 7.
15. W.J. Hooker correspondence. Royal Botanic Gardens, Kew.
See also Nelson and McCracken (1987) - Note 7.
16. COLBY, T. (1835). *Ordnance Survey of the County of Londonderry*. Dublin. The first edition is a rare and virtually unknown book, but there is a copy in the National Library, Dublin; it was greatly expanded, and a second edition was published in 1837.
17. PRAEGER, R.L. (1901). *Irish Topographical Botany*. Dublin. This contains a comprehensive bibliography of Irish botany, which, despite being over eighty years old, would be difficult to surpass.
18. Miss Baily (later Lady Kane) was acknowledged as the author of the flora within a short time of its appearance: she herself acknowledged the contribution of John White.
See also Nelson and McCracken (1987) - Note 7.
19. GILBERT, L.A. (1986). *The Royal Botanic Garden, Sydney, 1816-1986*. Sydney.
Charles Moore's years in Ireland are mentioned briefly by Nelson and McCracken (1987) - Note 7.
20. HINCKS, T.D. (1840). On early contributions to the flora of Ireland; with remarks on Mr. Mackay's *Flora Hibernica*. *Annals and Magazine of Natural History*, 6: 1-12, 126-135.
Mackay correspondence. School of Botany, Trinity College, Dublin. I am grateful to Dr. J. Parnell for access to these letters.
For histories of the Cork Botanic Garden, see the following:
MCCRACKEN, E.M. (1980). The Cork Botanic Gardens. *Garden History*, 8(1): 25-40.
CARR, D.J. and CARR, S.M. (1981). James Drummond in Cork. In *People and Plants in Australia*. Sydney.
21. Dr. Mary Noble and Mr. Andrew Brown have thoroughly researched the Drummond brothers, and have provided

valuable new information to supplement that already published in the sources noted above. I am most grateful to them for their assistance and for permission to include these notes.

James Drummond was baptised on 7th January 1787, and Thomas Drummond was baptised on 8th April 1793; these records are contained in the registers of the Parish of Inverarity and Methy [or Meathie], Angus (Scottish Record Office, Edinburgh). Their father was Thomas Drummond, gardener at Fotheringham estate. The family has no connection with Hawthornden, as is frequently, but incorrectly, stated.

Thomas Drummond's period as Curator of Belfast Botanic Garden remains to be properly documented, but letters among the correspondence of William Hooker (now in Royal Botanic Gardens, Kew) indicate that he was in Ireland at least as early as August 1828. He was dismissed early in December 1830, but remained in Belfast with his wife and family for some time.

To date, there is no published account of Thomas Drummond's time in Belfast which is accurate; the information included here is culled from letters in W.J. Hooker's correspondence, held at the Royal Botanic Gardens, Kew.

For a history of the Belfast Botanic Garden, see:

MCCRACKEN, E.M. (1970). *The Palm House and Botanic Garden, Belfast*. Belfast.

22. NELSON, E.C. (1984). *An Irish Flower Garden*, pp. 23-24. Kilkenny. Bishop is not mentioned by McCracken (1970) - Note 21.
23. NELSON, E.C. (1987). 'In honour of Ireland' - the Hibernian contribution to *Curtis's Botanical Magazine* 1787-1987. *Kew Magazine*, 4: 39-51
24. For a review of Belfast's role in natural history, see: ROSS, H.C.G. and NASH, R. (1985). The development of natural history in early nineteenth century Ireland. *From Linnaeus to Darwin: Commentaries on the History of Biology and Geology. Society for the History of Natural History, Special Publication No. 3*: 13-27.
25. ALLEN, D.E. (1986). *The Botanists. A History of the Botanical Society of the British Isles through 150 years*. London.
26. Information on the composition of the Botanical Society of Edinburgh was extracted from the printed minutes of the Society.
NELSON, E.C. (1981). William McCalla - a second 'panegyric' for an Irish phycologist. *Irish Naturalists' Journal*, 20: 275-283.
NELSON, E. C. (1983). William McCalla, discoverer of *Erica mackaiana*. *Yearbook of the Heather Society*, 1983: 28-32.
27. See also Nelson and McCracken (1987) - Note 7.

- NELSON, E.C. (1981). Two centuries of orchids at Glasnevin. *Orchid Review*, 89: 136-140.
- NELSON, E.C. (1983). David Moore, Miles J. Berkeley and scientific studies of the potato blight in Ireland, 1845-1847. *Archives of Natural History*, 11: 249-261.
28. MOORE, D. and MORE, A.G. (1866). *Contributions towards a Cybele Hibernica*. Dublin.
The 12-partite division is now replaced by R.L. Praeger's forty vice-counties (see D.A. Webb, *Scottish Naturalist*, 1986: 131).
29. See also Nelson and McCracken (1987) - Note 7.
30. NELSON, E.C. and DORE, W.A. (1987). James McNab's collections in eastern North America, 1834: some notes on nomenclature and type specimens in the National Botanic Gardens, Glasnevin, Ireland (DBN). *Notes from the Royal Botanic Garden Edinburgh*, 44: 343-349.
- NELSON, E.C. (1980). A contribution towards a catalogue of collectors in the foreign phanerogam section of the herbarium, National Botanic Gardens, Glasnevin (DBN). *Glasra*, 4: 31-68.
31. Dr. Henry is frequently, but inaccurately, stated to have been born in Ireland; he was born in Dundee - for correct details see the following:
NELSON, E.C. (1980). An Irish Mandarin: Augustine Henry (1857-1930). *An Taisce Journal*, 4(2): 12-14.
PIM, S. (1984). *The Wood and the Trees: a Biography of Augustine Henry*. 2nd edition. Kilkenny.
HENRY, A. (1893). *Notes on Economic Botany of China*. Facsimile edition, with introduction by E.C. Nelson (1986). Kilkenny.
32. Biographical information on these and other botanists is included in the following:
NELSON, E.C. (1984). *An Irish Flower Garden*. Kilkenny.
WALSH, W.F., ROSS, R.I. and NELSON, E.C. (1983). *An Irish Florilegium*. London.
WALSH, W.F. and NELSON, E.C. (In press, 1988). *An Irish Florilegium 2*. London.

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A CHECK-LIST OF THE AQUATIC COLEOPTERA OF THE VICE-COUNTIES OF SELKIRK (79) AND ROXBURGH (80)

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This paper is an attempt to give a complete list of the water beetles which have been recorded from the two Watsonian vice-counties of Selkirk (79) and Roxburgh (80). The author's own records since 1973 form the basis of the paper, but all known records, published or not, have been scrutinised and used where desirable. Such a list has not hitherto been published for the two vice-counties, although they are included in the paper by F. Balfour-Browne (1960) in which records for all Scottish vice-counties are summarised.

The Vice-Counties

Both vice-counties lie in the central Borders area, where Roxburgh marches with England to the south and with Selkirk to the north. They correspond fairly closely to the counties of the same names which existed up to the time of the local government reorganisation into regions, although the exact lines of the boundaries, especially that between Roxburgh and Selkirk, had earlier been sufficiently altered to make a detailed vice-county map essential for the accurate allocation of records.

Both vice-counties are hilly, with only small areas, used mainly for mixed farming, under 150 m. This lower-lying land is mainly in the narrow river valleys, except where, in eastern Roxburgh, it merges into the rich Merse of Berwickshire. About two-thirds of Roxburgh and eastern Selkirk lies between 150 m and 300 m, forming areas of marginal farming and hill pasture. The remaining, higher ground is largely covered with a rather thin dry layer of peat or peaty soil, with stones and rock exposed on many of the hilltops. Some of the higher ridges, especially along the Roxburgh-Northumberland border, are topped by flat areas supporting peat 'flows' at altitudes of 500-600 m. These are areas of deep, active *Sphagnum* peat, often with numerous ponds, as on Catcleuch Shin, just west of the A68 road where it crosses the border.

The whole area drains eastwards by the River Tweed and its tributaries into the North Sea, except for a small triangle in the south of Roxburgh which is drained by the River Esk into the Solway Firth. The largest tributaries of the River Tweed

are the Ettrick and Yarrow Waters in Selkirk and the Teviot Water in Roxburgh. The feeder hill streams are all very small, and all the sizeable streams lie in the lowland zone. This means that their waters are affected by agricultural activities and by town effluents. There is no seaboard.

The most interesting and prolific sites for water beetles are the numerous 'mosses', most of which lie in the hollows of a closely-spaced 'scarp and vale' landscape formed by the erosion of folded Silurian rocks. Such areas are particularly extensive in north-west Roxburgh and the adjoining area of Selkirk, and nearly all lie at altitudes between 165 m and 290 m, which places them above the zone of intensive farming and its accompanying pollution. They are of interest because of their range of trophic status, which is determined largely by the mineral content of the water entering them and by their altitude, exposure and size. They range from very poor, oligotrophic fen to a few that are almost rich enough to be termed eutrophic. Nearly all have been directly affected in the past by such activities as the digging of peat, clay or marl, or damming to make duckponds. Marl-digging, in particular, has resulted in the formation in the 'mosses' of many open waters which would not otherwise have existed. The area is poor in raised bogs, probably because of insufficient rainfall. Those that do exist are greatly altered, but some of the fens contain interesting areas of incipient raised bog. Other wetlands exist in other kinds of hollows, such as those on old moraine, medieval fish-pond sites, etc.

Much of the more gently-sloping ground of the upland farming and pasture zone has a covering of boulder clay, many feet thick in places. This has a very variable mineral content, especially of calcium, which affects the nature of the ground water. It may be as a result of this that, while most of the hill burns support a very poor beetle fauna, a few show remarkable and unexpected richness. The larger rivers have scarcely any associated ponds, and the great majority of farm mill ponds have disappeared, those remaining often serving as dumps for surplus, decaying crops. Mature deciduous woodland is very scarce, and the small amount which does exist is mainly on very steep ground and therefore without ponds. Small lochs are quite numerous, but they nearly all lie in the 'mosses' zone. The area is thus very poor in good low-altitude sites for water beetles. The only larger loch is the barren St. Mary's Loch in Selkirk, about 5.5 km long by 0.5 - 0.7 km wide, at an altitude of approximately 245 m.

History of Collecting

In the early 19th century, the central Borders area was quite remote, and no published records from this period, or earlier, are known. The earliest are to be found in *Entomologia Edinensis* (Wilson and Duncan, 1834) which contains a surprisingly large number of records from Roxburgh, doubtless because of the residence there for some time of the junior author. Unfortunately, few of these records can be localised to actual sites. There is also an interesting record in a paper by Little (1838). For about forty years, approximately 1830-1870, entomologists of the pioneer Berwickshire Naturalists' Club (founded 1831), with visiting friends, amassed an imposing number of records and published them in volumes of the Club's *History*. These were mainly for the eastern vice-counties of Berwick (V.C. 81) and North Northumberland (V.C. 68), and the scattered references to Roxburgh and Selkirk are not now of much interest. Hislop (1872), however, published a few records, mentioned below. Also during this period, Murray's *Catalogue* (1853) contained a number of records for the area, but most seem to have been taken directly from the earlier work (1834) of Wilson and Duncan.

The next list of any significance is that by Whitehead *et al.* (1904) who lived in Galashiels. It is unfortunate, considering the curious and doubtful nature of some of these records, that no trace of Whitehead's collection has been found. J.E. Black also collected in Roxburgh about this time, and some of his specimens in the Royal Museum of Scotland are of interest. More recently, records have been added by F. Balfour-Browne (1940, 1950, 1958 and 1967), D.J. Jackson (1972) and E.S. Brown (1963, in Balfour-Browne 1967), all now deceased, and by Dr. G.N. Foster (pers. comm.) and Mr. D. Bilton (pers. comm.). The author has done a good deal of collecting since 1973, but has published relatively little (Sinclair 1975; Foster and Sinclair, 1976 and 1982).

The Check-List

For the sake of brevity, the full check-list is divided into three sections, as follows:

Section A: Widely distributed beetles.

Section B: Less common beetles.

Section C: Doubtful records.

For each species, the name of the beetle is followed by the numbers of the vice-counties from which records are known. An asterisk * at a number indicates that the species is not included for that vice-county in Balfour-Browne's (1960)

summary of Scottish records. Most of these are new vice-county records, except for *Cercyon* spp., *Megasternum* and Elmidae, none of which was included in that paper. The two Hydrophilid genera are included because the listed species have all been taken in fens, in at least some cases living under water. Any comments in the lists on abundance or distribution are on a local basis, except where it is stated otherwise.

Nomenclature follows Kloet and Hincks (1977).

Section A

Beetles which are widely distributed and likely to be found in a high proportion of sites that appear suitable. Precise localities are not given.

HALIPLIDAE

<i>Haliplus confinis</i> Stephens	79*	80
<i>H. flavicollis</i> Sturm	79	80
<i>H. fulvus</i> (Fabricius)	79*	80
<i>H. lineatocollis</i> (Marsham)	79	80
<i>H. lineolatus</i> Mannerheim	79	80*
<i>H. obliquus</i> (Fabricius)	79*	80
<i>H. ruficollis</i> (Degeer)	79*	80
<i>H. wehnckei</i> Gerhardt	79*	80*

DYTISCIDAE

<i>Hygrotus inaequalis</i> (Fabricius)	79*	80*
<i>Hydroporus angustatus</i> Sturm	79*	80*
<i>H. discretus</i> Fairmaire	79*	80
<i>H. erythrocephalus</i> (L.)	79	80
<i>H. gyllenhalii</i> Schiodte	79*	80*
<i>H. incognitus</i> Sharp	79*	80*
<i>H. longulus</i> Mulsant	--	80*
<i>H. melanarius</i> Sturm	--	80*
<i>H. memmonius</i> Nicolai	79*	80
<i>H. morio</i> Aubé	79	80*
<i>H. nigrata</i> (Fabricius)	79*	80*
<i>H. palustris</i> (L.)	79	80
<i>H. planus</i> (Fabricius)	79*	80
<i>H. pubescens</i> (Gyllenhal)	79	80
<i>H. striola</i> (Gyllenhal)	79*	80*
<i>H. tristis</i> (Paykull)	79*	80*
<i>H. umbrosus</i> (Gyllenhal)	79*	80*
<i>Potamonectes assimilis</i> (Paykull)	79	80
<i>P. elegans</i> (Panzer)	79	80
<i>Oreodytes sanmarkii</i> (Sahlberg, C.R.)	79*	80*
<i>O. septentrionalis</i> (Sahlberg, C.R.)	79*	80

<i>Laccornis oblongus</i> (Stephens)	79*	80*
(Foster and Sinclair, 1976)		
<i>Platambus maculatus</i> (L.)	79	80
<i>Agabus affinis</i> (Paykull)	79*	80*
<i>A. congener</i> (Thunberg)	79*	80*
<i>A. guttatus</i> (Paykull)	79*	80*
<i>A. melanocornis</i> Zimmermann	79*	80
<i>A. nebulosus</i> (Forster)	79*	80
<i>A. paludosus</i> (Fabricius)	79	80*
<i>A. sturmi</i> (Gyllenhal)	79	80
<i>A. unguicularis</i> Thomson, C.G.	79*	80*
<i>Ilybius ater</i> (Degeer)	79*	80
<i>I. fuliginosus</i> (Fabricius)	79*	80
<i>Rhantus bistratus</i> (Bergstraesser)	79*	80
<i>R. exoletus</i> (Forster)	79	80*
<i>Colymbetes fuscus</i> (L.)	79*	80*
<i>Dytiscus marginalis</i> L.	79	80
<i>D. semisulcatus</i> Müller, O.F.	79	80*

GYRINIDAE

<i>Gyrinus caspius</i> Ménétriés	79*	80*
<i>G. substriatus</i> Stephens	79*	80*

HYDROPHILIDAE

<i>Helophorus aequalis</i> Thomson, C.G.	79*	80
<i>H. arvernicus</i> Mulsant	79*	80*
<i>H. brevipalpis</i> Bedel	79*	80
<i>H. flavipes</i> Fabricius	79	80
<i>H. grandis</i> Illiger	79*	80
<i>H. minutus</i> Fabricius	--	80*
<i>H. obscurus</i> Mulsant	79*	80*
<i>Coelostoma orbiculare</i> (Fabricius)	79*	80*
<i>Cercyon atomarius</i> (Fabricius)	79*	80*
<i>C. haemorrhoidalis</i> (Fabricius)	--	80*
<i>C. lugubris</i> (Olivier)	--	80*
<i>C. marinus</i> Thomson, C.G.	79*	80*
<i>C. melanocephalus</i> (L.)	--	80*
<i>C. tristis</i> (Illiger)	79*	80*
<i>C. ustulatus</i> (Preyssler)	79*	80*
<i>Megasternum obscurum</i> (Marsham)	79*	80*
<i>Hydrobius fuscipes</i> (L.)	79	80
<i>Anacaena globulus</i> (Paykull)	79	80
<i>A. limbata</i> (Fabricius)	79*	80
<i>Laccobius bipunctatus</i> (Fabricius)	79*	80*
<i>L. minutus</i> (L.)	79*	80*
<i>L. striatulus</i> (Fabricius)	79*	80
<i>Enochrus coarctatus</i> (Gredler)	79*	80*

<i>E. quadripunctatus</i> (Herbst)	
var. <i>fuscipennis</i> Thomson, C.G.	79* 80*
<i>Chaetarthria seminulum</i> (Herbst)	79* 80*

HYDRAENIDAE

<i>Hydraena britteni</i> Joy	79* 80*
<i>H. gracilis</i> Germar	79 80
<i>H. riparia</i> Kugelann	79* 80
<i>Limnebius truncatellus</i> (Thunberg)	79* 80*

ELMIDAE

<i>Elmis aenea</i> (Müller, P.W.J.)	79* 80*
<i>Esolus parallelepipedus</i> (Müller, P.W.J.)	79* 80*
<i>Limnius volckmari</i> (Panzer)	79* 80*
<i>Oulimnius tuberculatus</i> (Müller, P.W.J.)	79* 80*

Section B

Less common beetles. Those vice-counties in which species have been seen, but not collected, by the author are enclosed in square brackets.

HALIPLIDAE

<i>Brychius elevatus</i> (Panzer)	79* 80
Widely distributed, but uncommon. Kale Water (NT761132), Halterburn (NT842273), Rankle Burn (NT317124), Yarrow Water (NT344262).	
<i>Halipylus immaculatus</i> Gerhardt	-- 80*
Grahamlaw Milldam (NT735299); a small dam with grain and potatoes dumped in it.	
<i>H. fluviatilis</i> Aubé	-- [80*]
In a deep well-eye at the edge of Boghall Moss (NT490186) (D. Bilton, pers. comm.).	

DYTISCIDAE

<i>Laccophilus minutus</i> (L.)	-- 80*
A duckpond (NY460837) and Hare Moss (NT468248).	
<i>Hyphydrus ovatus</i> (L.)	-- [80]
Recorded from Faldonside Loch (NT506329) (Whitehead <i>et al.</i> 1904), Yetholm Loch (NT802278) (Jackson 1972) and Murder Moss (NT504285) (G.N. Foster, pers. comm.). The inclusion of this species in the list for V.C. 79 by Balfour-Browne (1960) appears to be an error caused by a mistaken allocation of the Faldonside record (Balfour-Browne 1967).	

Coelambus impressopunctatus (Schaller) -- 80*

This species was first found in the area, as single specimens, in a few of the richer fens in 1976, and in greater numbers and more widely the following year. Nearly all these localities had previously been examined more or less frequently, and it seems likely that the species may have arrived as a result of loss of habitat elsewhere during the very dry summer of 1976. It still persists in some of the sites. All the records are for fens containing or adjoining large ponds or lochs.

Hydroporus elongatulus Sturm -- 80*

Added to the British list by Foster (1976) from Peebles (V.C. 78). It is found, sometimes plentifully, in a few mesotrophic fens of varying type. Hare Moss (NT468248), Blind Moss (NT458184), Woolaw Loch (NT462173) and Kippielaw Moss (NT493154). For distribution elsewhere, see Foster (1984).

H. glabriusculus Aubé 79* 80*

Added to the British list by Sinclair (1975), and since reported elsewhere only from west Norfolk (Foster 1984). It appears to be a beetle of rich, relatively undisturbed, ancient fens although a single specimen was taken in the edge of Hutlerburn Moss (NT420235), a *Sphagnum* bog. Adderstonlee Moss (NT533121), Lang (Nether Whitlaw) Moss (NT506293), Batt's Burn Moss (NT508299), Beanrig Moss (NT517293) and Blackpool Moss (NT518291). It has also been found in one site in Berwickshire (Foster and Sinclair, 1982).

H. longicornis Sharp 79* 80*

This species has now been taken in several fens, but it is nearly always very scarce. It was found on one occasion (19th June 1979) in abundance in a muddy ditch at the edge of Ale Moor Loch Fen (NT386148).

H. obscurus Sturm 79* 80*

This beetle is often plentiful in acid peat holes, but is found very sparingly, if at all, in other habitats where it might be expected.

Deronectes latus (Stephens) -- [80]

There is one record by Balfour-Browne (1960 and 1967) from the burn flowing into Ale Moor Loch. The specimen is in Balfour-Browne's collection in the Royal Museum of Scotland.

Stictotarsus duodecimpustulatus
(Fabricius) -- 80*

This is scarce but widespread. It was listed for V.C. 79 by Balfour-Browne (1960) on the basis of a Whitehead *et al.* (1904) record for Faldonside Loch, which is actually in V.C. 80.

Oreodytes davisii (Curtis) 79* 80*
Local, but sometimes plentiful when found. A few records are scattered over the two vice-counties.

Agabus arcticus (Paykull) 79* 80*
Found plentifully in a number of small lochs in grid squares NT31 and NT41, but nowhere else. The altitude range is 270-360 m.

Acilius canaliculatus (Nicolai) -- 80*
Buckstruther Moss (NT540120), Lindean Reservoir (NT503292) and Adderstonlee Moss (one larva; G.N. Foster, pers. comm.).

A. sulcatus L. -- [80*]
Only one specimen known; found in 1975 by Mr. A. Buckham in an old lily-pond near Denholm (NT587182). It is now in the author's collection.

GYRINIDAE

Gyrinus marinus Gyllenhal 79* 80
Crooked Loch (NT353139) and Branxholme Wester Loch (NT422109) (E.S. Brown, in Balfour-Browne 1967). These are two of the lochs which contain *Agabus arcticus*.

Orectochilus villosus (Müller, O.F.) -- 80
Distribution appears to be very patchy. Plentiful in the Teviot Water near Hawick (NT505133) every June. Recorded also from the Jed Water near Jedburgh (Little 1838) and the Liddel Water at Kershopefoot (NY475829).

Hydrochus brevis (Herbst) -- 80*
Very scarce in rich and relatively undisturbed fens. Lang Moss (NT506293) and Beanrig Moss (NT517293).

Helophorus griseus (Herbst) 79* --
A single specimen from a muddy burn near Outer Huntly (NT427243); this beetle was seen by Dr. R.B. Angus, who considered it to be the first authenticated Scottish record. From near Loch Lomond, Maitland (1966) recorded, without comment, *H. affinis* (Marsham) which may have been of this species but the specimen is not available for examination.

H. strigifrons Thomson, C.G. 79* 80*
Yarrow Water near Sundhope (NT351274), Tandlaw Moss (NT488178).

Enochrus ochropterus (Marsham) -- 80*
Found in a few acid bogs. Sometimes very plentiful in Buckstruther Moss.

HYDRAENIDAE

Ochthebius bicolon Germar -- 80*
Rare. One on 14th April 1982 in the Northhouse Burn (NT439073).

O. dilatatus Stephens 79* 80*
Scarce. Beanrig Moss (NT517293), Dry Moss (NT483266) and Blind Moss (NT458184).

O. exsculptus Germar 79* 80
Found, sometimes plentifully, in a few rivers and larger burns. Northhouse Burn, Ale Moor Loch Burn (G.N. Foster, pers. comm.) and near Kershope Bridge (NY501833).

O. minimus (F.) -- 80*
Ploughlands Pond (NT684269), Hare Moss (NT468248), St. Leonard's Pond (NT490122), Woodhead Moss (NT612263) and Lilliesleaf Moss (NT539252).

Hydraena minutissima Stephens -- 80*
Two sites only; Teviot Water near Denholm (NT550180), and Northhouse Burn.

H. nigrita Germar -- [80]
In the Royal Museum of Scotland there is a male specimen taken by J.E. Black in the Jed Water near Jedburgh.

H. rufipes Curtis -- 80*
Scarce. Northhouse Burn and Kershopefoot.

Limnebius nitidus (Marsham) -- 80*
Only one site known, but the species is easily missed or mistaken for small *L. truncatellus*. Northhouse Burn.

ELMIDAE

Riolus subviolaceus (Müller, P.W.J.) 79* 80*
Very scarce in moss in rapid burns. Near Craik (NT358088) and Northhouse Burn.

Section C

Doubtful or mistaken records, or records requiring verification. No specimens seen by the author.

Hygrotus quinquelineatus (Zetterstedt) 79 --
This is listed in Balfour-Browne (1960) but there is no mention of it in his unpublished files (1967), and no record has been found. It must therefore be considered a doubtful listing, requiring confirmation.

H. versicolor (Schaller) -- 80
Recorded (as *H. collaris*) by Wilson and Duncan (1834) as

occurring "in stagnant water throughout Roxburghshire, not unfrequent". It seems probable that this refers to *H. inaequalis*, which is listed only for Dumfriesshire in the same publication. Murray (1853) also listed it as *Hydroporus reticulatus*, and these two mentions appear to be the basis for its inclusion in Balfour-Browne (1960). This species should, therefore, be deleted from the vice-county list.

Porhydrus lineatus (Fabricius) -- 80

Balfour-Browne (1960) included this species because of a record by Hislop (1872) from Girrick Pond, near Smailholm. Since this locality is just across the boundary in Berwickshire (V.C. 81), the species must be deleted from the Roxburgh list.

Potamonectes depressus (Fabricius) 79 80

In Section A, it was assumed that the listing of this species by Balfour-Browne (1960) referred to *P. elegans*, which he treated as a variety of *depressus*. His unpublished papers mention specimens of *Deronectes depressus* var. *depressus* in the Hudson Beare collection in the Royal Museum of Scotland. The late D.K. Kevan dissected these specimens and showed them to be *P. elegans*. There is, therefore, no evidence for the occurrence of *P. depressus* in either vice-county.

Agabus biguttatus (Olivier) 79* --

Whitehead *et al.* (1904) listed this beetle as common in the neighbourhood of Galashiels. Considering the unreliable nature of this list, the absence of other records, the general scarcity of the species, and the omission of the common (and rather similar) *A. guttatus* from the same list, it is better to consider this an error.

A. labiatus (Brahm) 79 80

Balfour-Browne (1960) listed this species for both vice-counties. His authority for V.C. 79 was a catalogue, dated 1909, of Whitehead's collection, although it is not included in Whitehead *et al.* (1904). Since there is no indication that Balfour-Browne himself saw the beetle, this record cannot be considered reliable. His authority for V.C. 80 appears to have been the listing of the species by Wilson and Duncan (1834) and Murray (1853) as occurring in "pools by Tweed and Teviot". This species ought not, therefore, to be included in either vice-county list until further confirmation is obtained.

Ilybius quadriguttatus

(Lacordaire & Boisduval) -- 80

Murray (1853) gave Roxburgh as a locality (as *I. obscurus*). Although Balfour-Browne (1950) was doubtful of this, he later (1960) included the species in the Roxburgh list. His unpublished material shows no additional authority for so

doing, and the status of the species must be doubtful in the absence of modern records.

Gyrinus minutus Fabricius -- 80

The only record known is by Little (1838) from a pond on Hawick Moor, repeated in Murray (1853). There is no more recent record, and the species must be deleted from the Roxburgh list.

Limnoxenus niger (Zschach) 79* --

This is included, as *Hydrobius oblongus*, in the list of beetles from the neighbourhood of Galashiels by Whitehead *et al.* (1904). However this confusion may have arisen, it can only be in error for *Hydrobius fuscipes*, which is not included in the list.

Discussion

A total of 112 species of aquatic Coleoptera has been reliably recorded from vice-counties 79 and 80, although not all species are recorded from both. This total comprises 11 Haliplidae, 51 Dytiscidae, 4 Gyrinidae, 29 Hydrophilidae, 12 Hydraenidae and 5 Elmidae. A further 9 records either await confirmation, or are almost certainly based on errors and so are unlikely to be confirmed. From comparisons with lists from neighbouring vice-counties, it appears likely that a very small number of Adepagan species and, perhaps, a slightly larger number of others may await discovery.

This is a poor list for such a large area. Most of the species are of wide distribution in Britain, although a few are found mainly in the north. Only one, *Agabus arcticus*, is included in Lindroth's 1935 list of boreo-British beetles (see Blair 1949), but the subsequently-discovered *Hydroporus glabriusculus* also satisfies his criteria for inclusion.

A notable feature of the list is the almost complete absence of species whose distribution is southern, the 'English' species of Balfour-Browne. The reason for their absence may be a combination of the Border hills' effect as a barrier and the rather extreme climate of the central area. The climatic factor is likely to be the more important, as a fair number of 'English' beetle species is recorded from mild, western Scottish localities even as far north as the Outer Hebrides (Waterston *et al.* in Waterston 1981).

Acknowledgements

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I have been greatly impressed by the unfailingly gracious reception I have been given, on a large number of visits, by the staff of the Royal Museum of Scotland, and by the extent of all kinds of help which they have so cheerfully given. For this, and for allowing me free access to the Museum's collections, I thank them, and I must mention especially Mr. E.C. Pelham-Clinton, Dr. M. Shaw and Miss I. Baldwin.

Lastly, for happy companionship in the field and stimulating discussions afterwards at home, I express thanks to a number of people, from whom I must select for mention Dr. Foster, Mr. Bilton and Professor J.A. Owen.

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THE RUBY-CROWNED KINGLET AT LOCH LOMOND SUPPLEMENTARY NOTES

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Following a re-examination of the evidence relating to the mid-nineteenth century occurrence of the North American Ruby-crowned Kinglet *Regulus calendula* on Loch Lomondside (Mitchell 1983), it was gratifying to find the record included in the recently published *Birds in Scotland* (Thom 1986) - albeit in square brackets and unfortunately again perpetuating the myth that more than a single bird was involved. Since preparing the original paper, however, three additional pieces of information have come to my attention, all supporting the opinion of those ornithological historians who believe that the exclusion of the Ruby-crowned Kinglet from the accepted list of North American birds reliably recorded in Britain can no longer be justified.

Dr. Dewar in the Crimea until 1857

One reason put forward by the ornithological establishment for rejection of the Loch Lomondside Ruby-crowned Kinglet was what was considered to be the inordinate delay (almost six years) between Dr. Donald Dewar procuring the bird in the summer of 1852 and producing it for expert examination in April 1858. In my original paper, attention was drawn to the fact that Dr. Dewar left this country for service in the Crimean War not long after obtaining the kinglet, but at the time I was unable to confirm the year of his return. From one of several obituary notices for Dr. Dewar housed in the local collection at Dumbarton Library, however, it is now known (see *North British Daily Mail*, 22nd March 1876) that he did not return to Glasgow to practise medicine until 1857, only about one year, at the most, before the preserved specimen was placed on view at the meeting of the Natural History Society of Glasgow on 27th April 1858 (Gray 1868).

Unreliability of 1883 B.O.U. List

Despite a quarter of a century's acceptance by a number of leading naturalists of the day, the Loch Lomondside Ruby-crowned Kinglet record was formally set-aside by the British Ornithologists' Union's committee charged with the compilation of the first definitive *List of British Birds*,

published in 1883 (B.O.U. 1883). The first B.O.U. *List* cannot be considered as authoritative as it set out to be, however, for in Henry Seebohm's *Geographical Distribution of British Birds* (1893) the fallibility of the author and his fellow compilers of the B.O.U.'s 1883 *List* was openly admitted, with the comment that the new work was an attempt "to make some amends to the Members of the British Ornithologists's Union for the thousand and one blunders contained in a list of British Birds compiled by their committee, for which I, as one of the seven delinquents, must bear my share of responsibility and blame".

Statement by James Lumsden

An important piece of corroboratory evidence is provided by the highly respected local ornithological recorder, James Lumsden, who was personally acquainted with Dr. Dewar for several years before the latter's premature death in 1876. In a letter on the subject of the Loch Lomondside Ruby-crowned Kinglet, published in the *Glasgow Herald* of 7th January 1904, Lumsden wrote "Some English naturalists have expressed doubt as to the locality where this bird was shot, thinking no doubt that such a small bird could not cross the Atlantic. For me Dr. Dewar's word, as I had it from his own lips, is enough".

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THE 1985 CENSUS OF GANNETS ON AILSA CRAIG

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As in previous years, the 1985 census of the Ailsa Craig colony of Gannets *Sula bassana* again took the form of a one-day census made from the sea in early May, with the usual check counts of selected control areas later in the year. After extensive tests over many years (see previous *Clyde Seabird Reports*) it became clear that the one-day census from the sea, combined with the later control counts, gave results strictly comparable to the original method of the census spread over an entire week, and this has been the method used for the past fifteen years, with the proviso that if any obvious discrepancy were to be found with the later control counts, then the entire census would be repeated. So far I am glad to say that this has not happened.

Present Population

The detailed counts for 1985 are given in Table 1, along with the comparative counts for the previous three years. As before, all are direct counts through binoculars of occupied nests, and all figures comprise the mean of several counts of each cliff-section, made at different times throughout the same day from the same counting-stations. Only occupied nests are counted; gatherings of Gannets away from the nest (sometimes called 'clubs') are ignored. Control counts made later in the year are used only as checks, and are not included in the official census.

In 1982 the Ailsa Gannet colony passed 20,000 occupied nests for the first time. The steady increase continues, and the counts of 20,161 occupied nests in 1982, 21,072 occupied nests in 1983, 21,997 occupied nests in 1984, and 22,811 occupied nests in 1985 have each been the highest populations ever recorded for Ailsa. Although the Gannet is steadily increasing throughout its entire range, nevertheless it is worth drawing attention to the fact that up to 1950 the Ailsa Craig colony had shown an average population of only some 5,000 nests.

No further population 'crashes' have taken place since 1975 and, as the annual counts show, during the ten years from 1976 to 1985 the Ailsa Colony has steadily increased by an

Table 1
 Counts of Gannet Nests on Ailsa Craig
 1982 - 1985

Total for each cliff section represents the mean
 of several separate counts

<u>Colony</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
Slidderly	290	299	348	371
Slidderly, Top Ridge	499	483	506	548
North of the Slunk	487	417	501	536
Foot of the Slunk	523	556	597	629
Above Ashydoe	239	244	287	299
Balvaar	999	1013	1037	1083
Below Balvaar	198	283	308	306
Balvaar, Top Ridge	301	387	401	449
Balvaar to Cairn	502	544	549	562
The Cairn	2499	2681	2703	2749
Cairn to Mare	663	672	688	726
Barrheads	2243	2301	2457	2498
Above Black Holes	402	388	413	452
Mare	4272	4101	4306	4301
Mare, Lower Ledge	183	197	188	191
Above Bed o' Grass	247	288	303	322
Mare-Stranny Point, S1	573	568	596	593
Mare-Stranny Point, S2	551	592	614	648
Mare-Stranny Point, S3	751	787	841	893
Mare-Stranny Point, S4	848	889	942	985
Stranny Point, South Side	42	51	48	50
Main Craigs, Main Part	1024	1281	1303	1396
Main Craigs, Top	1287	1464	1499	1573
Main Craigs, East	387	428	426	481
Main Craigs, East Top	88	96	89	111
Main Craigs, Far East	-	-	-	-
Main Craigs, Far East Top	63	62	47	59
Grand Total:	20161	21072	21997	22811

average of just under 1,000 nests a year.

The Cliff Colonies

For the annual census work the original sub-divisions of the Ailsa cliffs, as named in Table 1, have continued to be used virtually unchanged for the past half-century, but it is important to realise that, with the steadily increasing population, these natural divisions are now no longer nearly so clear-cut and that in many cases individual neighbouring cliff colonies have largely merged into each other, or, in the case of the cliff-top colonies, have now spread significantly on to the sloping ground at the cliff tops. This tendency to boundary spread was first reported some twenty-five years ago (see *Clyde Seabird Report*, 1: 5) but has markedly increased over the years, so that some demarcation lines are now entirely artificial. Nevertheless, the cliff divisions under the long-established local names still have considerable relevance and will continue to be used.

Index of Room

As previously reported, this extension and merging of the traditional areas of the Ailsa cliffs occupied by breeding Gannets has made the previous index of the amount of 'room' available for Gannets on Ailsa largely irrelevant. During the quarter century up to 1980 the 'cliff' index actually doubled, from some 10,000 nests in 1955 to some 20,000 nests in 1980, but since the existing cliff colonies have so largely merged, and particularly if the Gannets continue to utilise the sloping ground at the top of the cliffs, clearly there is almost no limit to the size of the breeding population which Ailsa can hold. With the steadily increasing size of the breeding colony, the annual count is now virtually the same as the index of room, as one would expect.

Previous Work

Direct counts of all occupied nests have now been carried out at the Ailsa Craig Gannet colony for nearly half a century. This work commenced in 1936, with a pioneer count by H.G. Vevers and James Fisher, and apart from a slight gap during the war years, when only curtailed counts and estimates of population could be used, they have continued without a break ever since.

By arrangement with the Editors, the results of the annual Ailsa Craig Gannet census are now being published regularly in the *Scottish Naturalist*, but the results of the previous annual census work appeared in various publications, in particular for

some twenty years in the series of *Clyde Seabird Reports* largely created for the Ailsa Gannet census by the Renfrewshire Natural History Society. A useful bibliography of all past census work was given in Gibson (1983), to which interested readers are referred, and references to the immediate past years are given below.

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THE NON-MARINE MOLLUSCA OF THE ISLE OF MAY, FIFE

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Introduction

The Isle of May, situated at the entrance to the Firth of Forth some five miles off the Fife coast, has been well-known for over a century as a pioneer site in Scotland for studying bird migration, and a Bird Observatory was formally established there over half a century ago, in 1934. Most of the early naturalists who visited the island, therefore, were primarily ornithologists, although some of these made passing observations on other items of interest.

Within recent times, visiting naturalists have taken a more direct interest in other aspects of the island's natural history, and among these visiting naturalists have been a few conchologists. Apart from the annotated list given by Egging (1960), however, no single account has brought together the reports of non-marine Mollusca found on the Isle of May, so this short paper attempts to provide a brief historical account of the known visits of these conchologists and other interested naturalists, plus a Systematic List of the species recorded; the possible origins of the molluscs are also discussed.

Historical

J.A. Harvie-Brown, the distinguished Scottish naturalist and pioneer of the study of bird migration, was the first to mention the occurrence of a mollusc on the island (1887). During his visits from 1880 to 1884 he recorded the Common Snail *Helix aspersa*, but apparently found no other species. In 1897 and 1910 William Evans, the well-known Forth naturalist, collected specimens of at least six species, and although he did not apparently publish his results, his specimens were deposited in the collections of the Natural History Department of the Royal Scottish Museum (now the Royal Museum of Scotland). The Natural History Department also has a specimen collected by D.K. Kevan in 1931.

V.D. Van Someren visited the island on 30th-31st March 1935 and collected specimens of four species. In July the following year H.G. Callan made a fairly detailed study of the island's invertebrate life, but his report (1936) includes no molluscs. Two visits by biologists in 1958, however, did produce some mollusc records; a Glasgow University party, on

the island from 20th to 27th June, studied the aquatic invertebrates and recorded three species of molluscs (Campbell *et al.* 1958, Maitland 1967), and T. Huxley of the Nature Conservancy recorded seven species between 15th and 18th September (Eggeling 1960). In June 1972 a party of students from University College, Cardiff, studied various invertebrate populations (Bellamy 1972), and their mollusc records were apparently incorporated into Kerney's Atlas (1976).

Between 1970 and 1979 the author visited the island regularly - mainly for bird-watching, although some notes were made on the molluscs seen - but from 12th to 19th July 1980, and again on 2nd-3rd July 1983, specimens of snails were actually collected. Where necessary, species identification was confirmed by using Ellis (1978), Kerney and Cameron (1979) or Macan (1969), and assistance with the more difficult species was given by Dr. Michael Kerney (see Acknowledgements).

The information in the following Systematic List has been compiled from all the above sources. Arrangement and nomenclature follow Walden (1976).

Systematic List

JENKINS' SPIRE-SHELL *Potamopyrgus jenkinsi* (E.A. Smith 1889)

First found by the author in 1980, in the polluted Mill Dam and the West Braes Pool. It was common and numerous in both, but was not found in any other water bodies, including the wells, despite exhaustive searches. This discovery is not at all unexpected in the light of this snail's colonising history.

DWARF POND SNAIL *Lymnaea truncatula* (Müller 1774)

In the late 1930s Patrick Sandeman of the Inverleith Field Club excavated a spring, and converted it into a small pool, known ever since as Pat's Puddle. The first records of the Dwarf Pond Snail were made in 1958, when both surveys found specimens in Pat's Puddle. Apparently, however, there have been no records since then, and certainly the author was not able to find this snail in 1980 or 1983.

SLIPPERY SNAIL *Cochlicopa lubrica* (Müller 1774)

Recorded by Evans in 1897, and later by T. Huxley in 1958. The author found it common in 1980 and 1983 around the Chapel, Cross Park and the North Plateau; a few specimens were also found on the east side of the island.

CHRYSLIS SNAIL *Lauria cylindracea* (Da Costa 1778)

Roebuck (1894) recorded some "very stunted" examples collected during August 1893. Evans collected apparently normal specimens in 1897 and 1910, as did Kevan in 1931, and those found by the author were not considered to be any different from those found elsewhere in east Scotland. This snail was found to be common virtually everywhere in both 1980 and 1983.

BEAUTIFUL SNAIL *Vallonia pulchella* (Müller 1774)

Recorded in Kerney's 1976 Atlas, presumably by the University College, Cardiff, team in 1972. The author found this an uncommon snail in both 1980 and 1983; only found near the Chapel.

[BEAUTIFUL SNAIL] *Vallonia excentrica* Sterki 1882

[*V. excentrica* is a close ally of *V. pulchella*, but there is apparently no generally accepted English name.] Collected by Evans in 1897, but no later information until recorded in Kerney's 1976 Atlas, again presumably by the Cardiff team in 1972. The author did not use mechanical sorting techniques in 1980 or 1983, and did not record any examples of this snail.

ROUNDED SNAIL *Discus rotundatus* (Müller 1774)

Recorded by Evans in 1910, and Van Someren in 1935, but surprisingly not again until 1980 and 1983, when the author recorded this snail as being common virtually everywhere.

BLACK SLUG *Arion ater* (Linné 1758)

Listed originally by Huxley in 1958, but not actually mentioned again until recorded by the author, who found it to be ubiquitous. It was noted annually from 1970 to 1979, and specimens were collected in 1980 and 1983.

HEDGEHOG SLUG *Arion intermedius* Normand 1852

Not discovered until 1980. The author found it to be fairly common around the Chapel, Cross Park, North Plateau, the Burrian and the east side of the island in both 1980 and 1983.

PELLUCID SNAIL *Vitrina pellucida* (Müller 1774)

Van Someren's record in March 1935 was the first. A specimen found on a migrant Meadow Pipit *Anthus pratensis* on 5th September 1960 was sent to A.R. Waterston at the Royal Scottish Museum. Young snails were common by the South Horn, the Chapel, and Cross Park in 1980, but the author failed to

find a single live specimen in July 1985. This was not unduly surprising, however, since adults of *pellucida* tend to be found much more commonly during the winter months.

CRYSTAL SNAIL *Vitrea crystallina* (Müller 1774)

Huxley in 1958 was the first to mention this snail. In both 1980 and 1983 this was an uncommon find, and only near the Chapel and Cross Park.

CELLAR SNAIL *Oxychilus cellarius* (Müller 1774)

W. Evans collected specimens in 1910. Recorded in Kerney's 1976 Atlas, again presumably by the 1972 Cardiff expedition. Only a few specimens were found by the author in 1980 and 1983, near the Chapel.

GARLIC SNAIL *Oxychilus alliarius* (Miller 1822)

Recorded by Evans in 1897, and in 1935 Van Someren also found this zonitid. It was not reported again until 1980 and 1983, when the author considered it to be ubiquitous.

JET SLUG *Milax gagates* (Draparnaud 1801)

Huxley's 1958 list made the first mention of this slug. In 1980 and 1983 it was uncommon, being found only near the Chapel and the Sheep Well.

TREE SLUG *Limax marginatus* Müller 1774

Two young Tree Slugs were found on a wall by the High Road in 1983. There are no previous records.

FIELD SLUG *Deroceras reticulatum* (Müller 1774)

Collected first by Van Someren in 1935, but not again until 1980 and 1983, when the author found this slug to be common everywhere.

DOOR SNAIL *Clausilia bidentata* (Strom 1765)

"Very stunted forms" were collected in August 1893 (Roebuck 1894, who did not identify the collector) but none has been found since.

GROVE SNAIL *Cepaea nemoralis* (Linné 1758)

Taylor's monograph (1894-1921) credits Harvie-Brown with the discovery of var. *minor* on the Isle of May, although Harvie-Brown himself (1887) made no mention of it in his paper. Possibly Taylor was relying on a later personal communication

from Harvie-Brown. At any rate, no further records of this species have come to light.

COMMON (or GARDEN) SNAIL *Helix aspersa* Müller 1774

Harvie-Brown (1887) reported no other land or freshwater mollusc between 1880 and 1884, although commented that he "had not proper instruments for examining the lake". This is the only snail mentioned in the daily log of the Bird Observatory (from 20th May 1950 onwards). Campbell *et al.* thought it common in 1958, and between 1970 and 1983 I considered it to be ubiquitous and in places abundant. Eluned Morgan of the Cardiff party in 1972 found three definite morphs present in high densities in Hogweed *Heracleum sphondylium* and Stinging Nettle *Urtica dioica* associations over the island (Bellamy 1972).

MARSH PEA-SHELL *Pisidium personatum* (Malm 1855)

This species was not found during the Glasgow University expedition's thorough survey of aquatic invertebrates in June 1958 (Campbell *et al.* 1958), although it was later recorded by Huxley in September 1958. Pat's Puddle, however, a man-made pool which rarely dries out, had a healthy population of this species in 1980.

OBTUSE PEA-SHELL *Pisidium obtusale* (Lamarck 1818)

Again, not recorded in June 1958, but found by Huxley in September 1958.

COMMON PEA-SHELL *Pisidium casertanum* (Poli 1791)

The only freshwater bivalve found by Maitland (1967) in 1958; only in Pat's Puddle. No other records.

Discussion

It is well known that freshwater Mollusca can be transported by wildfowl (Boycott 1936), and several species of ducks regularly visit all the bodies of water present on the island. Few of these water bodies are permanent, however, the tarns in particular drying up during the summer months. All five wells hold water, but these are not visited by wildfowl and no freshwater molluscs have been recorded in them; the author searched these intensively in 1980 and 1983.

The only permanent freshwater is the Mill Dam, but due to sea-spray and pollution from the Lighthouse engine house it is not particularly attractive to molluscs. *Potamopyrgus jenkinsi*, however, can live in brackish water, so is likely to remain

there. *Lymnaea truncatula* is likely to be an occasional coloniser which becomes extinct when pools dry up. It is interesting to note that sheep, the other host of the Liver Fluke *Fasciola hepatica*, were grazed on the island until 1960.

Transportation by birds is also recorded for terrestrial species. Williamson *et al.* (1959) record instances of the snail *Vitrina pellucida* being carried by several species of migratory land birds, and, as already noted in the Systematic List, a specimen of *V. pellucida* from a migrant Meadow Pipit trapped on the Isle of May in September 1960 was sent to A.R. Waterston at the Royal Scottish Museum. While this may be the reason for the existence of some species on the Isle of May, renowned for its migratory birds, the author considers that the main cause is accidental introduction by man.

Some species are likely to have been introduced by the monks at the Priory who resided on the island from the 1140s until 1730 (Eggeling 1960). The building of the Beacon in 1636 and subsequent lighthouses brought lighthouse keepers and their families. Most maintained gardens with vegetables and other plants, and some introduced soil and still do so to this day. *Helix aspersa* and *Deroceras reticulatum* are well known garden pests and are quite likely to have been introduced in this way.

The activities of the Bird Observatory since 1934, especially the numerous trees and shrubs planted in the Heligoland traps, are likely to be another source of introductions. Further planting in the future will undoubtedly provide new species for the island list, but it is unlikely that this will have any significant effect on the ecology of the May.

The populous Common Snail *Helix aspersa*, however, provides a valuable food supply for migratory, and occasionally breeding, Song Thrushes *Turdus philomelos*. During December visits from 1972 to 1974 the author also frequently observed Oystercatchers *Haematopus ostralegus* and Curlews *Numenius arquata* extracting these snails from the walls in which they were hibernating.

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